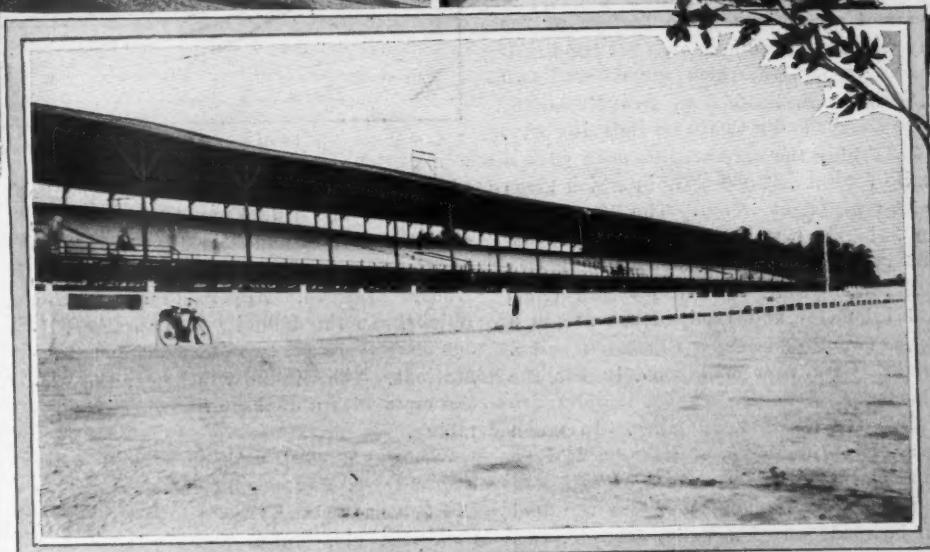
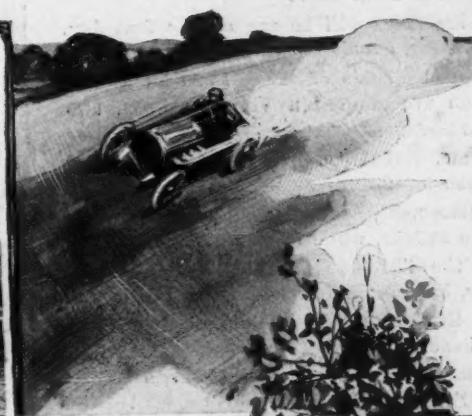


# MOTORAGE

## HOOSIER SPEEDWAY READY FOR CARS



INDIANAPOLIS, IND., Aug. 13—On the eve of the first meet of the new Indianapolis motor speedway, which is to be held Thursday, Friday and Saturday of next week, all is activity at the track where the big gangs of men are working night and day in an effort to complete the course in time for the racing. The last yard of the outer circuit was finished tonight but it will be another 2 or 3 weeks before the inner circles will be available for racing purposes and it will be some time after that before the entire plant will have approached anything like finality.

It has been a race with Father Time and a battle with the weather man ever since March 20, when Carl Fisher, F. H. Wheeler, A. C. Newby and J. A. Allison of this city undertook to convert a huge tract of land into an ideal motor racing plant. A formidable proposition to start with, it has been made even more so by adverse weather conditions, so that in the last few weeks it has been a case of work night and day in order to have the track in shape for the motor cycle meet which opens here tomorrow. Never did promoters have such a close call, for it was not until

THE UPPER ILLUSTRATION SHOWS THE HOMESTRETCH OF THE INDIANAPOLIS MOTOR SPEEDWAY AND THE LOWER ONE THE GRANDSTAND

late this afternoon that the final strip was completed. The practice of the two-wheelers has been going on for a couple of days, but it has been impossible for any of them to make the full circuit, for the reason that the workmen have been busy connecting the two strips in the back-stretch. Practice of motor car drivers has been confined to occasional sprints down the home stretch and a testing of the turns.

### Trying Out the Turns

No great speed has been made as yet, but it is stated that a National six took one of the turns at 80 miles an hour, which is accepted as demonstrating that Engineer

Andrews' theories are working out well. The big car going at this speed held the turn beautifully and there was not the slightest tendency toward skidding. But the surface of the track evidently needs one meet before it will show its true speed capabilities, so it may be the first set of racing will not develop anything startling in the way of record-breaking. Indeed, Engineer Andrews himself declares that the track will be 100 per cent better the last day of the coming meet than it will be the first. At the present time the surface is a bit rough, it is asserted by drivers who have tried it.

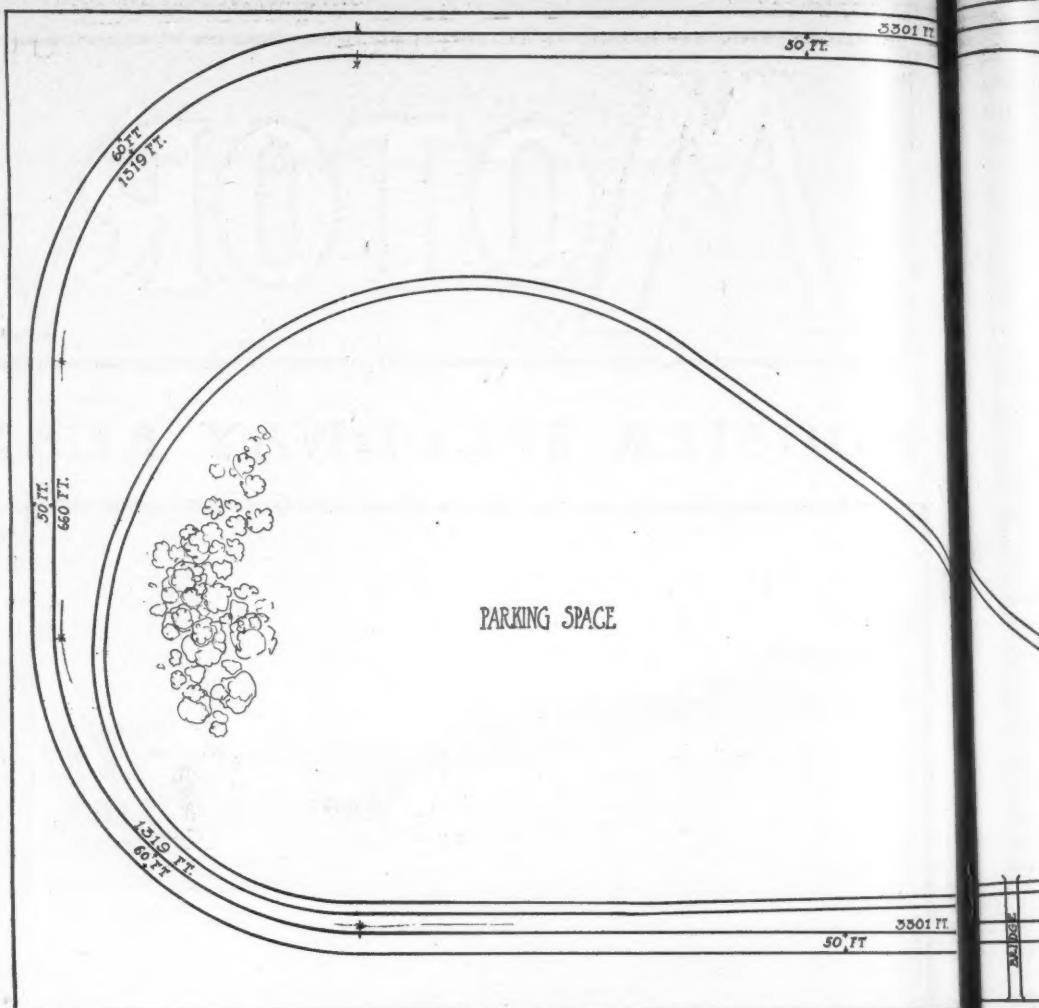
Preparations for the meet are going on

space and it is evident that the racing will be interesting indeed. The lists closed yesterday and showed something like 150 entries, probably representing about fifty cars and seventeen different makes. The manufacturers who are supporting the first meet include the Apperson, National, Stoddard-Dayton, Velie, Jackson, Chalmers-Detroit, Buick, Marmon, Marion, Fiat and Chadwick, while individual entries of the Benz, Stearns, Thomas, Peerless and Christie have been made. The drivers who will compete include Lytle, Denison, Aitken, Kincaid, Harroun, Zengel, Miller, Stickney, Hearne, Greiner, Strang, Burman, de Witt, de Palma, Chevrolet, Ryall, Christie, Oldfield and Crocker.

#### Card for First Meet

Five races will be run on the first day, Thursday, opening with a 5-mile event for stripped chassis of the 161-230 lot and in which are entered a Velie, Jackson, two Stoddards, a Chalmers-Detroit and two Buicks. Event No. 2, 10 miles, for stripped chassis of 231 to 300 cubic inches piston displacement, has attracted a Marmon and three Buicks, while in event No. 3, 5 miles for the 301-400 inches stripped chassis class, has in it a Jackson, Knox, Buick and two Stoddards. In the 10-mile free-for-all handicap, open to all cars entered at the meet, there are two Jacksons, a Knox, two Stoddard-Daytons, a Marmon, Apperson and six Buicks. The feature of the day will be the 250-mile race for the Prest-O-Lite trophy, in which are entered two Jacksons, two Stoddards, two Nationals, three Buicks and a Chalmers-Detroit Forty.

On Friday the card will be open with a 5-mile for the 231-300 class in which three Buicks will fight it out. The 10-mile for the 301-450 class has entered a Jackson, Knox, Buick, Chalmers-Detroit and two Stoddard-Daytons. For the record trials at 1 kilometer and 1 mile there are in a Knox, two Stoddards, a Chadwick and a Buick. Cars that will compete for the Wheeler & Schebler \$10,000 trophy are eligible for event 4, 10 miles. In are a Knox, two Stoddards, a Marmon and an Apperson. The 161-230 class of cars will race in a 50-mile event in which the field will be made up of a Velie, Jackson, two



MAP OF INDIANAPOLIS MOTOR SPEEDWAY IS OPENED TODAY—OUTER OVAL

Stoddards and two Buicks. The 10-mile free-for-all has a Jackson, two Stoddards, a Fiat and the Chadwick six. The 5-mile handicap is made up of two Jacksons, Knox, Marmon, Apperson and seven Buicks. In the 100-mile race for the 231-300 class there are two Marmons and three Marions. The windup will be for the 231-300 class with a Jackson and three Buicks racing.

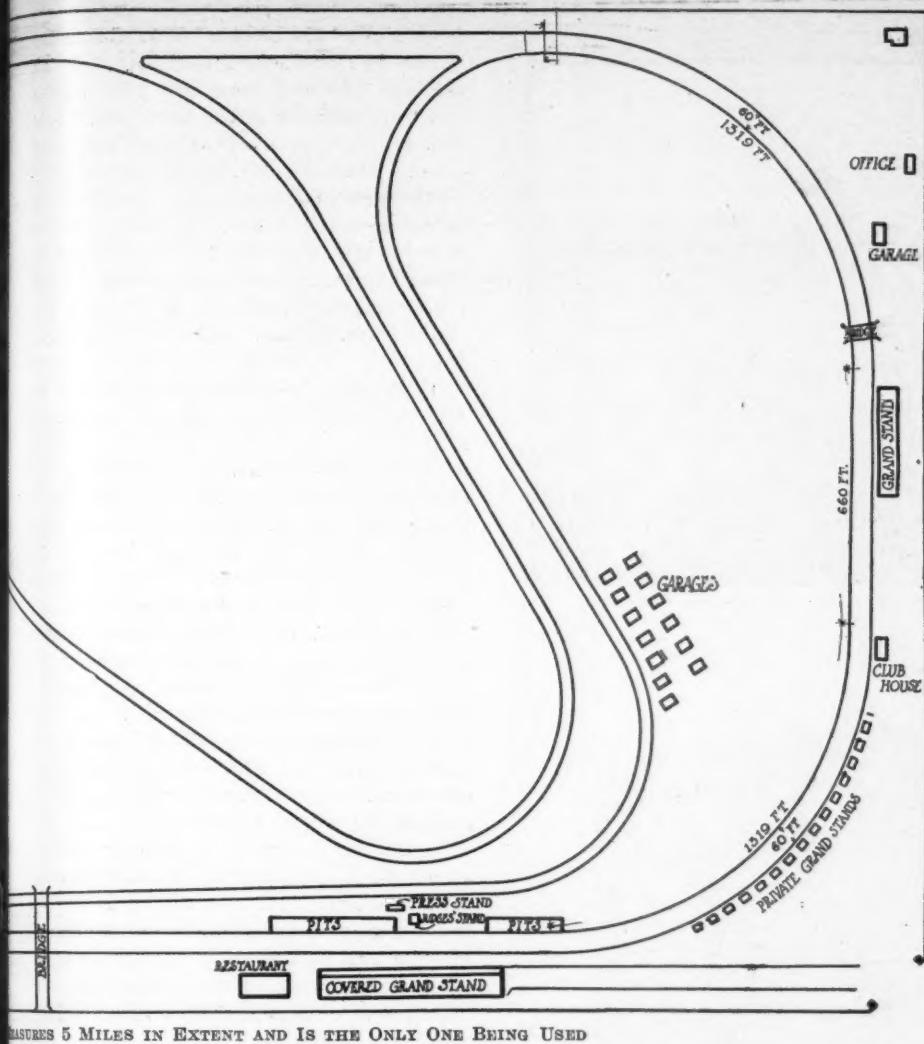
Saturday's card will open with more record trials at the mile and 1 kilometer and fighting Father Time will be the Knox, Chadwick six, Buick eight-cylinder and

two Stoddard-Daytons. In the 15-mile handicap there are a Jackson, Knox, Marmon, Apperson, two Stoddards and seven Buicks. The consolation race will follow this and then will come a 25-mile free-for-all in which will run a Knox, the Chadwick six and two Stoddards. The 10-mile amateur championship has in it A. W. Greiner in a Thomas six, G. C. Van Camp in a Stearns, J. Ryall in a Buick and E. A. Hearne in a Fiat. Ryall and Greiner are the only entrants in the 15-mile amateur free-for-all.

Eleven cars are entered in the 300-mile race for the Wheeler & Schebler trophy,



A ROW OF PRIVATE GARAGES ON INNER LOOP OF SPEEDWAY FOR CONTESTING CARS.



OVAL MEASURES 5 MILES IN EXTENT AND IS THE ONLY ONE BEING USED

including the Knox, two Stoddards, two National sixes, a Fiat, two Appersons and three Buicks. In this race the field is limited to cars up to 600 cubic inches displacement.

When the motoring army invades Indianapolis next week it will be treated to a great surprise party in the way of this great speed enterprise which is even more stupendous than one imagines in his mind's eye before seeing it. The plat of ground on which it is located is  $1\frac{1}{2}$  miles in length and  $\frac{1}{2}$ -mile wide, containing 320 acres of ground. Inside those whitewashed

fences is the racing plant complete on which has been spent at least \$400,000 and into which has been inculcated every modern idea in a speedway that such enthusiasts as Messrs. Fisher, Wheeler, Newby and Allison could conceive. A birdseye view of the layout shows two tracks—one a huge oval  $2\frac{1}{2}$  miles in length and enclosing another which is a sinuous, twisting thing, bending here and curving there until it covers fully as much ground as does the outside circuit. This is the basis of the plant, but everywhere else on the grounds there is more evidence of thought

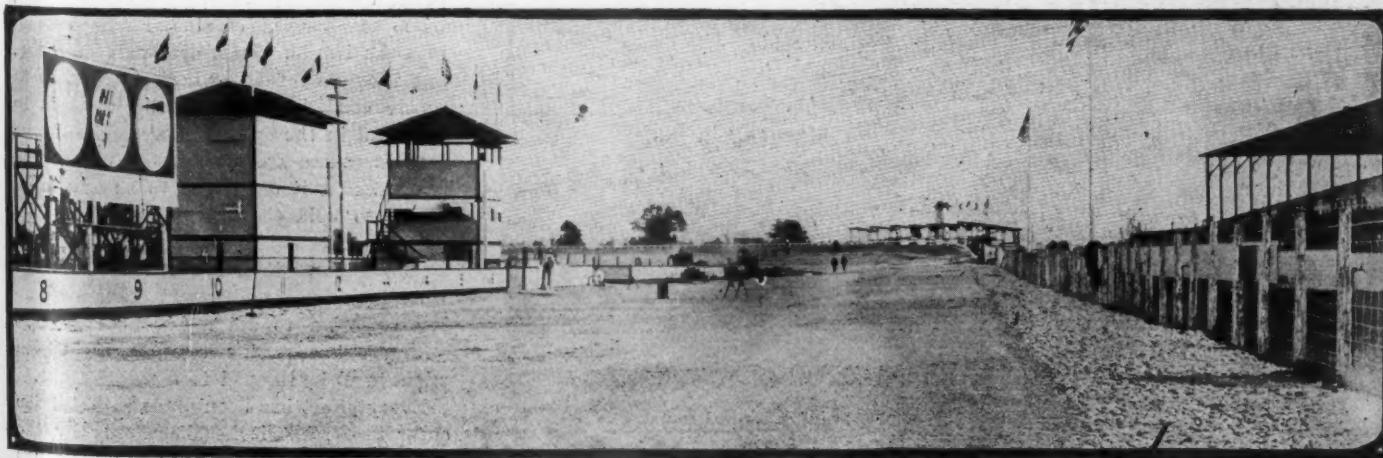
and care in providing not only for the convenience of the manufacturer wishing a place where he can try out his product as well as for the comfort of the spectator.

#### Plant Near City's Heart

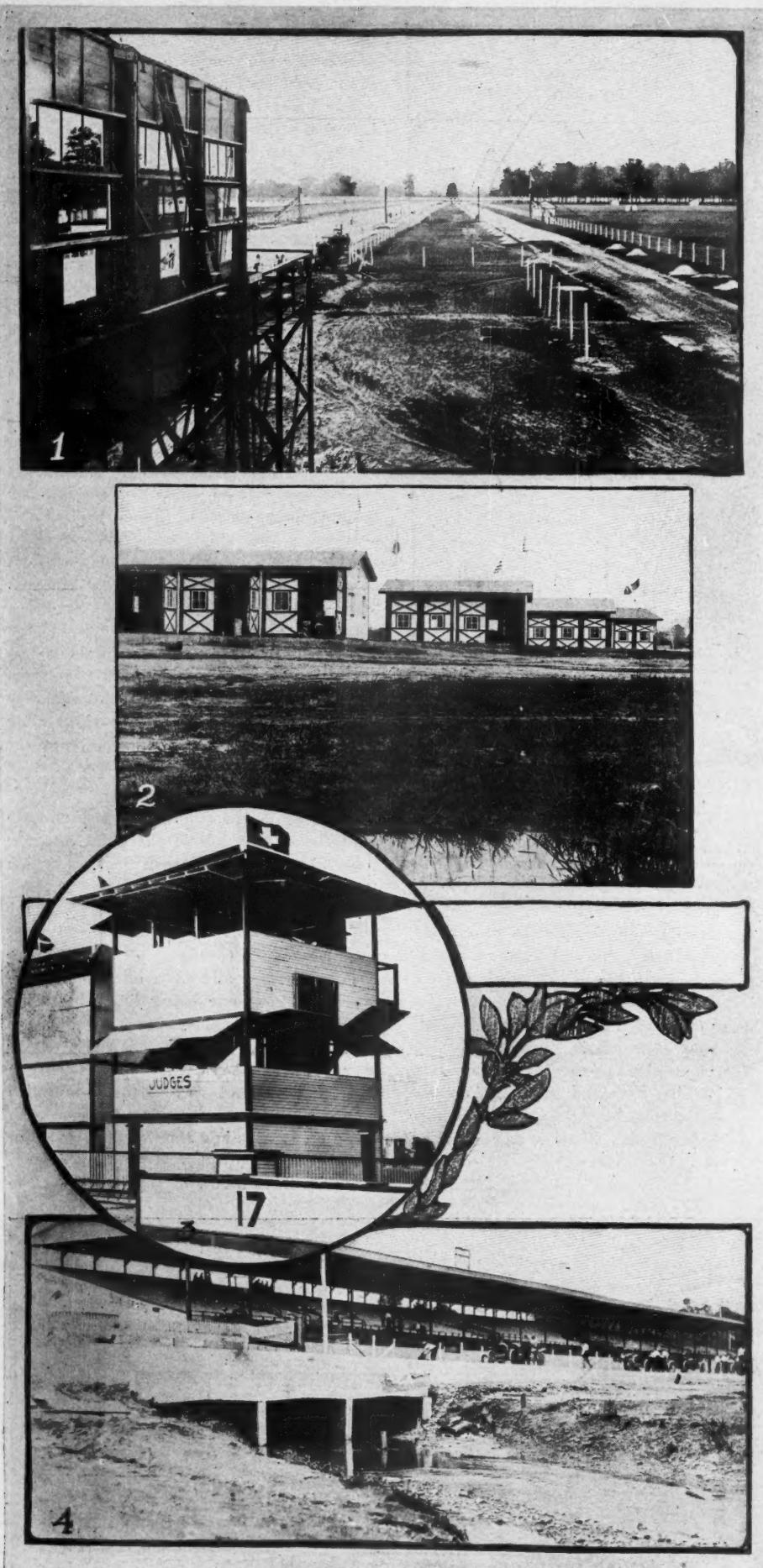
The plant is most conveniently located, being on a flat plateau  $3\frac{1}{2}$  miles northwest of the center of Indianapolis and which is easily reached by means of the boulevard system and a 1-mile stretch of improved road. At the southwest corner of the grounds the New York Central railroad passes and in addition there is an interurban service. Sidetracking facilities are provided, so that special club cars or private cars can be kept there during a meet. The main entrance to the ground is at the southwest corner and a road runs directly from the front gate to the main grand stand, a commodious structure which is covered and which will hold 10,000 people without crowding. This is not the only provision made for seating the spectators though, for ranged around the south turn are thirteen miniature grand stands intended for private parties, each of which will hold twenty-eight people. Then, in about the middle of the south turn, is another big stand—the bleachers, which will hold 4,200 more. This is not covered. It is understood the promoters of the speedway intend constructing other stands later on, but at the present time they believe they have seating capacity enough for the first meet or two.

#### Other Features of the Speedway

Aside from the grand stands there are many other features of the plant, not the least of which are fifteen garages which are to be used by the racing teams, each of which will have its own garage, which will be fitted up with tool bench and other facilities for tuning up cars. These garages vary in size from one car up to a dozen, the big one being located outside the larger track. The others are bunched in a picturesque position just south of the south end of the inner loop and only a few hundred feet away from the finish line. Each garage is painted green with white trimmings and the doors are the full width of the building. Leaving this feature, one finds a row of repair pits on the



LOOKING TOWARD FIRST TURN WITH PRIVATE GRAND STAND ON OUTSIDE OF TRACK



1—LOOKING UP THE HOMESTRETCH—OUTER TRACK TO LEFT AND INNER TO RIGHT  
 2—A GROUP OF THE PRIVATE GARAGES ON THE INFIELD  
 3—THE JUDGES' TOWER WITH ITS HINGED DOORS AND TABLES  
 4—THE CEMENT BRIDGE UNDER THE COURSE AT THE END OF THE GRAND STAND

inner side of the outside track. There are twenty-five of these repair pits, half on one side of the judges' and press stands and the remainder on the other side. These pits are nothing more or less than huge boxes without a cover. They are not sunk in the ground as are those seen at road races, but are about breast high. It is noticed that Moross has acknowledged himself superstitious or else has regard for the feelings of those who are, for he has omitted No. 13 and in its place has put No. 44.

Every effort has been made to make the officials' stand complete in every detail. It is located at the tape and between the main and inner tracks. It is a three-story affair, boarded up on all sides and with slanting wooden windows which will keep out the glare of the sun and the rain if the weather man becomes perverse. The press stand right alongside is designed with the same care, there being accommodations for about sixty newspaper men and operators. The man who takes pictures is not overlooked, either, for the ground floor of this pretentious establishment contains a dark room where pictures may be developed. From this press stand as well as from the judges' stand one may look at any corner of the track, the windows being on all sides. The only obstruction to the view is a bunch of trees at the northern end of the grounds—a small wood in which may be parked cars if it is found there is not enough room in the vast expanse of infield, which offers 180 acres of space for parking purposes.

Access to the infield is had by means of a subway underneath the track and at the northern end, in addition to two truss-work bridges which have been built for the convenience of those who wish to get to the grand stands from the infield. One of these bridges is located near the bleachers on the south turn, while the other crosses the track to the north end of the grand stand.

#### Description of Course

Now as to the course itself. Most of those who follow racing matters know that the Indianapolis speedway consists of an outer track  $2\frac{1}{2}$  miles in circumference, while another one of similar length occupies the infield. Both are surfaced alike, but the idea of the winding track is to secure conditions approaching what is to be found in the open country. The turns on this course are not banked but are so gradual that it ought not to be any trick at all to hold them at top speed. This inside course will not be used for the meet next week, for it is not done as yet, but when it is completed it will make a pleasing variation to see a big field of cars strung out over the two courses which might well be likened to a magic maze.

Every effort has been made to finish the outer track, but it has been only by the hardest kind of work that the task has been accomplished. Night and day of late the men have been working, the track at

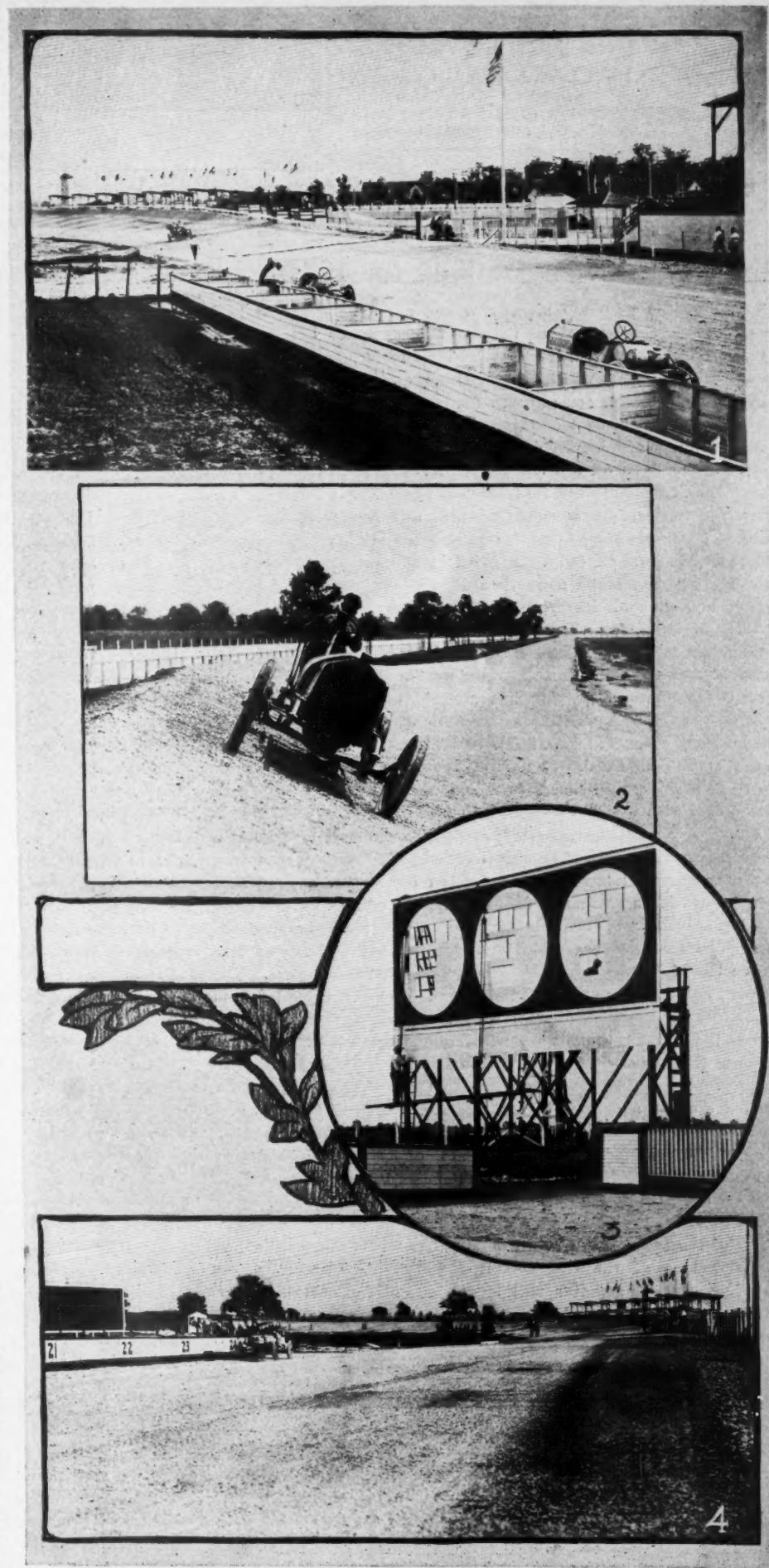
night being well lighted with Prest-O-Lite gas tanks. By this kind of labor the speedway was ready for the motor cyclists, but now comes the job of refining it for the motor car races.

Upon the shoulders of P. T. Andrews, an engineer from New York city, has devolved the job of finishing this work and right well has he stuck to the job. At times he has had as high as 450 men working, and besides this has employed five steam tractors, 300 mules, 150 scrapers and four 6-ton and three 10-ton rollers. The result of this is an outside track  $2\frac{1}{2}$  miles in circumference and with four curves. The banking is 20 per cent. At each end—the north and south—there is a 660-foot turn and each of the straights measures 3,300 feet. The banking itself is unique and it is doubtful if anything like it ever has been used in track construction. The track itself runs up 50 feet from the pole and at this point there is another smaller banking which is termed a cap and which rises 2 feet in 10, making a sort of a bumper or fender. A car can run on it if necessary but the tendency seems to be to stop skidding in case a car hit it. To further safeguard the turns and prevent any distressing accidents which would result if a car ran off the track, there is a small board fence 24 inches in height at the cap, which is scientifically designed so that a car skidding up to it will strike the hub caps instead of the wheels, thus holding the car on the track. The banks themselves are 12 feet in height, while the radius of the curves is 840 feet.

#### Automatic Timing and Signaling

The Warners, makers of speedometers, have furnished the timing device and automatic score boards that will be used, donating them to the speedway. The timing device is especially designed for use at this track. In the center of the field there is to be a steel tower 60 feet in height on the top of which will be large dials which will show the three leading cars, their time and the number of miles they have traveled. In the judges' stand there is to be a large circular table where will be kept the clock-like instrument which is to record the separate times of the cars. It also will be possible to split the time so that the mile and kilometer times may be taken. A double check system will be employed, though, a separate score being kept by a corps of timers and scorers. On the automatic score board there will be numbers 18 inches in height which can be seen for a third of a mile. The timing arrangement has not been installed as yet, but will be in place in a day or so. The big score board, though, is almost completed.

Carrying out the details of a perfect plant, there is being installed a telephone system which is to be controlled from the main station in the observing tower. The grounds will be divided into six equal parts and at each point of the track there will be a booth and a man to operate the phone under the direction of the chief timer.



1—THE GRAND STAND PITS IN FOREGROUND AND PRIVATE STAND BEYOND  
 2—SHOWING HOW THE COURSE IS CAPPED AT EACH TURN  
 3—ONE OF THE AUTOMATIC SIGNAL BOARDS ON THE COURSE  
 4—THE FIRST TURN FROM THE GRAND STAND, SHOWING THE BANKING



## The Bright Outlook for 1910

WITH the prophesy already talked about in every state in the union that there will be 150,000 motor cars made in this country next year, the problem already is being discussed as to where these cars will be sold. This problem is being discussed in other countries, for already England has been rent asunder with the announcement of this enormous 1910 output, and France and Germany are equally interested in wondering what effect it is going to have on the marketing of their respective products next year. The only one that has reason to talk is England, with her free trade arrangements by which any American car manufacturer can ship his products into England, Ireland, Scotland and Wales free of duty. English manufacturers, taken all together, do not make more than 12,000 cars, not the output of several individual factories in this country, and the English maker is imagining that several of the big American builders will dump onto their shores hundreds of second-hand or left-over models. The English maker does not have to worry on this score, for it would require but a short excursion through the majority of the American factories to discover that there are no left-over models and that few of the makers have any second-hand models on hand. If any of the American manufacturers have to seek foreign shores to dispose of any surplus 1910 cars, those countries will have nothing to fear in the line of old models, and any machines exported will in 90 per cent of the cases be next year's models. The question as to whether any American manufacturer will have to seek foreign buyers for any of next year's cars is an extremely debatable point. At present it looks as if America will be able to take all of the cars that the American factories are capable of turning out. The west will prove the big buyer next year—as it has proven this year. The present crops are the heaviest in a decade; prosperity is evidenced on every hand, and with the present high price of grains it is certain that money will be plentiful; and it is equally certain that where money is plentiful among westerners that same money will be freely spent. To the western farmer with a good crop on a quarter or half section, the cost of a medium-priced car is not of much consequence when the value to him of the car is considered. The country west of Chicago could absorb the entire output of 1910 and then not be satisfied. But the East will be a big buying factor next year and New England, as it always has been, will take a big percentage of the output of not a few of the factories. The old adage that "like begets like" is specially true of the transportation world. The more people who buy cars the greater will be the incentive for those non-owners to get into line. When one resident secures a car it is an easier matter to sell his neighbor on the right or left a machine. The selling of medium-priced cars, easy as it has been this year, will be easier next year. The public confidence in these machines has been established and their demand will increase. The big car is holding its own, and all of the makers of this type of machine will greatly increase next year's output and not experience any difficulty in disposing of them. The buyer of a small car 2 years ago will be the buyer of a big car next year, and so the story of graduation from the small car to the big one holds true in every state in the union. Next year will be a banner year for the motor trade. Although the biggest gains in number of cars built will be in the ranks of under \$1,500, the high-priced makers are arranging for almost double the output of the present season.

## Federal Motor Legislation Needed

THAT the present season has witnessed more touring from one part of the country to another is but further proof of the necessity of federal legislation governing the licensing of motor cars and drivers and the determining of uniform speed limits not only for the rural sections of different states, but also for residential localities. Not a few touring parties have this year reported troubles because of this lack of federal control of motor cars, which are not creatures of any one state but which may cross a different state every day in a week's tour. Much of the difficulty is occasioned by unknown speed laws through villages, towns and cities. A uniform speed law is as essential as is a uniform method of licensing. The speed law that is safe in the country in Maine is safe in other states, and what holds true with country places is equally true with respect to populous centers. Nothing is more confusing to the tourist than when entering a town to not know the speed limits and have either to stop and ask or else be under the strain of wondering whether there is going to be an arrest or not for a 15-mile-an-hour performance. It is equally unsatisfactory in traveling in states where the home-state license tag is not honored to have to waste time going through the formality of securing a state license for the state passed through or run the danger of a long-drawn out justice court proceedings. Each of the separate states of the union is today too small in comparison with the possibilities of the motor car to lay claim to controlling individually the car speed and license arrangements. It would be almost as non-sensical for individual states to dictate to railroads as to regulations on speed and other road laws as to attempt to control the motor car. The strongest claim for federal control from a license point of view is the injustice of a man in one state having to pay more for the privilege of operating his car than does his neighbor in an adjoining or any other state. The rights of the road are free to all citizens provided they do not abuse them, and it is not in keeping with this principle that an owner of a runabout car in a New England state should pay \$10 per year for the privilege of running that car when a citizen of a central state receives the same privilege for \$2. Interstate touring as done every day by touring parties in this country demands, further, a uniformity of road signals indicating dangerous cross-road intersections, dangerous grade crossings of railroads and electric trolley cars, dangerous curve descents and dangerous bridge approaches. At present many states have no warning signs for such danger points, and in states where an attempt has been made to mark such the means used are so different that it is difficult for the driver to interpret them as he drives the car. There exists in many states today a law compelling road commissioners to put signboards at road intersections, but which law is not enforced, but there should be a federal law laying down the exact nature of signs for road conditions as above mentioned, and this law should be enforced from one side of the country to another. In close alliance with federal control and licensing of cars will come the construction of national roads in conjunction with state appropriations. The West, in places at least, has awakened to the necessity of good roads, and Minnesota has taken the lead with appropriations and delegations have gone east to study the road conditions as met in New England. Other states will soon follow, and together it is hoped the different states under proper delegations will take up in earnest the question of federal road building.

# EUROPE IN FEAR OF AMERICAN INVASION

B RUSSELS, Aug. 2—The recent announcement of the absorption of the Cadillac Motor Car Co. by the General Motors Co. has set the old country's press to start or rather has re-started a campaign against American motor cars. The big deal involving the big Detroit concern was cabled to this side of the Atlantic, and in Germany, France, and especially in England, the news has created something like a sensation. It seems to be the opinion of many that there is a large overproduction of motor cars in the United States and that several of the recent mergers and reorganizations have been made with a view of disposing of the left-over stock here in Europe. The Britishers seem to be specially uneasy and unwilling to believe the statements published in the motor trade papers of Chicago and New York, or even the statements of the agents or representatives of the interested American concerns in England. Among the various articles published the last few days the following from the Daily Telegraph, of London, in its issue of July 31, is quite characteristic and seems to contain quite a few erroneous statements. The article, which is headed "An American Trust," reads as follows:

#### Views of English Press

"Everybody is looking forward to a fine August, for this is the month of pleasure motoring trips in this country and on the continent. Even the chief managers of the various manufacturers of the self-propelled vehicle take this month off in order to put on one side the cares and stress of competition. But this year those gentlemen must be questioning in their minds if they will not have to spend their vacation thinking how best they will meet a threatened American invasion. The most important news this week is contained in a brief telegram announcing that the Cadillac Motor Co. has been purchased by the General Motors Co. for \$1,000,000, the \$100 shares changing hands at \$300. This was a good profit to the original holders, but does not affect the seriousness of the news to British motor manufacturers.

"Very few people in this country realize how big the motor car business is in America and how small it is in comparison in the British Isles. One is obliged to make that statement in order that the true situation of affairs can be rightly understood. The General Motors Co. has only been in existence for a short time, and has acquired a number of American motor manufacturing concerns. It probably will continue to acquire still more. At present it owns the Cadillac company, which has an output of 10,000 cars per annum, the Buick company, also with an output of 17,000 cars per annum; the Oldsmobile company, which makes a car de luxe and has a small output, say 1,000 cars; the Rainier, a car probably unknown to motorists in England, but of which nearly 300 per

annum are sold in America; the Oakland, whose factory places 600 cars on the market each year; the Reliance company, with another 300 car output, and two or three lesser known motor companies, whose output probably amounts to 700 cars, more or less, each year.

#### Predicts an Invasion

"Roughly speaking, the present total output of this combination of firms in the General Motors Co. is 33,000 cars per annum. As far as one can safely estimate Great Britain's total number of motor cars manufactured does not amount to more than 10,000 per annum. America, on the other hand, is making nearly 200,000 cars each year, and they have to be disposed of. This is the point where the British maker is affected—how the American disposes of his stock. At the last Olympia show the 20-30-horsepower Cadillac was priced nearly \$1,000 less than any British-made car of equal horsepower, and a great number have been sold during this season, so the British public will have a practical test of their worth. Buick cars also are known here, but the majority of cars made in the United States never have been seen or heard of in this country. This is the present position of affairs, but what will the future bring?

"At present no one actually knows what will be the result of this American combine, but it may be safely assumed that their effort will be to keep prices up in their own country and dump their surplus production in England. Harvey du Cros, who may be looked upon as the father of the motor industry in this country, raised the same question some 12 months or so ago, when

he was offered the surplus, at a death-rate price to the British maker. This he patriotically refused to entertain, but the General Motors Co. will deal direct with the public itself, so if it decides to export its productions and sell at a low rate there is nothing to prevent it doing its best to dispose of the goods wherever it can. For the moment trade is particularly good, and the British maker can look back on the season of 1909 with contentment. There are of course, some exceptions but they are few, and even for them next year's prospects are favorable. There is no need of panic or hysterics, but it behooves the motor trade of this country to take due notice of what is happening, and while there is yet time so firmly establish their good will that reduced prices will not tempt their customers to leave them."

Other important London and provincial dailies publish articles which all have the same object, a gentle knock against the American cars. Some refer their readers to the times of the bicycle era in America, when the surplus of what they term "unusable bicycles in America" was sent by the shiploads to Europe and sold at any old prices. A few French papers already have spoken about the probable invasion of cheap American cars. It will not be long before a real campaign will start, as is always the case when some excuse for it is on hand.

#### Publicity Is Needed

The best answer that could be made by the American manufacturers, be they represented over here as yet or not, would be to enter some of the big annual events of importance that take place in England and on the continent. There are so many tours, hill-climbs and speed trials promoted during the summer that there seems to be no doubt that in some of them American cars would show up well to the front. Progressive United States concerns would make a hit by promoting themselves tests of endurance as they have been doing in the states. Running a car 100 miles a day for 100 days, or only 50, would be something never before attempted on the continent. A demonstration tour taking in about all the capitals of Europe, or only of central Europe, would give a concern much free advertising. The thing is to become known. Opel cars hardly were known in this country 3 months ago. Today there is not another car that is as much talked about. And it is not the winning and general showing of the Opels in the Prince Henry tour which has made them known so well in this Belgian land, it is the fact that they came to Ostend, took part in the speed trials and the regularity run and made the best showing of the meeting excepting one Fiat and the Mercedes racing cars. And now Opel cars are being sold although there is no agency established yet.

## Coming Motor Events

OPENING OF MOTOR SPEEDWAY—Three-day meet at Indianapolis, August 19, 20, 21.

BRIGHTON BEACH MEET—Twenty-four-hour race of Motor Racing Association, August 26-27.

TRIBUNE TROPHY RUN—Annual reliability of Minneapolis Automobile Club, August 24-25.

"LITTLE GLIDDEN" TOUR—Tour of Minnesota Automobile Association, August 26-28.

NATIONAL STOCK CHASSIS MEET—Motor carnival, including national stock chassis road race, at Lowell, Mass., September 6-11.

BALTIMORE 24—Motor Car Racing Association of Maryland meet at Baltimore, September 10-11.

FLAG-TO-FLAG RUN—Start of Denver-City of Mexico endurance run, September 15.

LONG ISLAND DERBY—Motor Contest Association meet at Riverhead, L. I., September 21.

MUNSEY TOUR—Washington-Boston and return reliability, September 21-29.

FAIRMOUNT PARK RACE—Second annual stock chassis race, 200 miles, at Philadelphia, promoted by Quaker City Motor Club, October 7.

ATLANTA SPEEDWAY—Opening meet at new speedway at Atlanta, Ga., November 9.



THE FAMOUS TURN ON LOWELL COURSE WHICH IS BEING IMPROVED—ARROWS SHOW COURSE DIRECTION

LOWELL, Mass., Aug. 16—Although Lowell's entry blanks have been out only a short while there have been several nominations made already for the road races of September 6 and 8, among those booked of late being four Chalmers-Detroit, as many Stoddards, two Benzes and five Knoxes. Louis Disbrow, in a Rainier, also has filed his declaration. One of the Benzes is a 24-horsepower machine which will run in the sweepstakes, while the big Benz will be driven by Ernest Stoecker of Germany, who is coming over here for the purpose. Charles Basle will drive the Renault, while H. F. Grant will be found at the wheel of an American Locomotive.

As planned the first day of carnival week, Monday, September 6, will be devoted to a series of sweepstakes. On Tuesday there will be the mile straightaways, eleven classes being provided under the A. A. A. schedule. The national stock chassis road race at 318 miles will be run.

#### Lowell Making Plans

That Lowell intends to make a general week of holiday during carnival is evidenced in the plans of the local commercial interests to close down all the mills and factories, as well as smaller places of business, in order that the entire population may turn out and participate in the celebration. At a meeting of the trades and labor council a few days ago the question of holding the annual Labor day parade was brought up and it was soon voted against, for it is obvious that Lowell's working men and women will take considerably more interest in a big speed battle than in a procession of toilers. It was proposed to hold a parade early in the morning so that all might witness the motor car races, but the idea was abandoned.

The novel plan for selling tickets for the races promises to work out most successfully. No fewer than 20,000 tickets have been turned over to a number of young women in the city, who will do their utmost to sell out. The ten young women who dispose of the greatest number of

## National Races at Lowell

### Many Makers Have Already Made Entries

tickets will be rewarded with a delightful trip to Niagara Falls and return, with all expenses paid.

Entrants in the contest are making arrangements for establishing camps near the course, the first to select quarters being the Knox team. William Bourque visited Lowell a few days ago and negotiated headquarters on George W. Cummings' place on Dunbar avenue, at the eastern end of the course. A crew of ten men from the Knox factory will soon be in the camp.

#### Working on Course

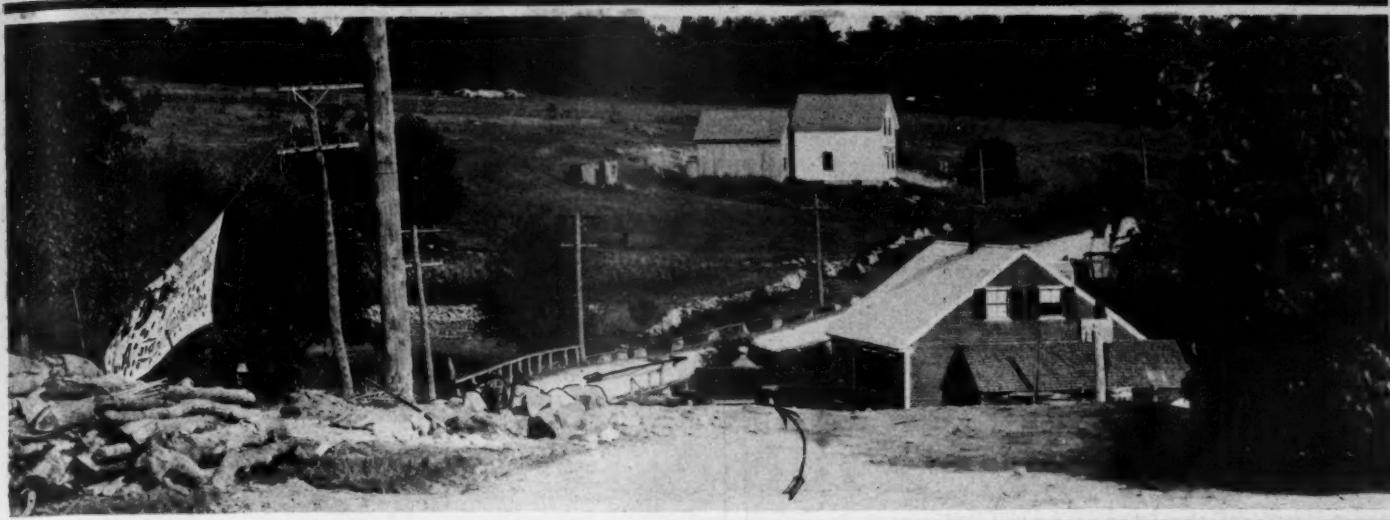
Everything is going along well as far as the road improvement and constructive work on the grand stands and the novel pontoon bridge across the Merrimack river are concerned. More men have been added to the working force of road builders and Mr. Heinze is positive that the course will be in the finest shape possible, not only for the contests themselves, but also in time for the drivers to try their cars

out properly a week or 10 days previously to the start of the race.

The method of applying the thousands of gallons of oil to the road surface is a scientific one. Instead of being dripped around promiscuously to run into ruts and form puddles it is being applied hot so that it sinks into the surface several inches and forms an oily cohesive bed that holds itself together and is practically dustless, instead of a mere greasy surface with occasional spots of greasy mud. The oil is heated to a temperature of 180 degrees and sprinkled with special apparatus from a water wagon. Sand is then spread over the oil and a few days later inspected and retouched where necessary, and then the same process repeated several times. Steam rollers are used to level and harden the surface.



THE HOMESTRETCH PAST GRAND STAND AT LOWELL



THE CELEBRATED DIP ON LOWELL COURSE SHOWING CAR ON IT AND DANGEROUS BRIDGE

## Assured Record Entries

### Course Is Being Rapidly Put in Grand Condition

"Before we get through with the preparations for this race meet the expenses will pass the \$50,000 mark," was the statement made by James McKenna, secretary of the board of trade here, and one of the hard workers in planning to make the national stock chassis races a success. The remark was made to the Motor Age representative on Thursday, and to show where the money was going he accompanied the writer on a trip over the Merrimack valley course. What the Motor Age man saw was convincing proof that the cost will be high, for men were busy on all sections of the road. So a series of pictures were taken showing how the work is being carried on on all parts of the course, and chiefly in the bad spots.

The first spot reached was the right angle turn at Dunbar avenue and the bou-

levard. Last year after the cars had made the turn a few times the road was ripped out badly, and when the race ended there were two ditches more than a foot deep where the wheels had furrowed out the road. Dunbar avenue is a short street built for a land boom but never finished. It is narrow and connects the back road and the boulevard. The first turn is not so bad, but the second one coming so close is apt to make trouble where drivers are trying to pass each other. The club has had men at work building up the roadway with rock and concrete so that there is no danger of the road breaking up. A corner of some 12 feet has been sliced off so that the turn is now more of a curve.

On the boulevard gangs of men were busy sprinkling loads of sand over the surface so that when the course is oiled there will be a substance to hold it. There will be 17,000 gallons of oil used on the boulevard alone to put it in shape, while over on the back stretch where there is

much sand now the road will be treated with oil and other ingredients to harden it up. Near the pontoon bridge a small army of carpenters was at work putting up the grand stand. This is about half finished and will hold about 6,000. In the center there will be a box for President Taft and his family, and in the rear of the box a specially-constructed lounging room is being built. A covered promenade will protect the people from rain in case the weather is bad. Directly across from the grand stand is the press stand. This is completed and is a big one.

Passing along the boulevard the pontoon bridge was sighted. This represents a cost of something like \$6,000 alone, and there will be no return from it after the races are over, for down it must come, and quickly, too, under orders from the war department. At first it was proposed to build it of pontoons entirely, but that was found impracticable, so piles and pontoons will both be used. This bridge will cross the river so that people coming to the races in trains and trolley cars may step off the vehicles and walk over the course right near the grand stand. Last year it was a long tramp from the cars in Lowell. The steam and electric roads are building sidings across the river where their cars can drop the people conveniently from anywhere, north, south, east or west.

#### Oiling the Boulevards

At the hairpin turn which marks the end of the western end of the boulevard and the beginning of the back road the course has been widened. There was a big willow tree there, more than 100 years old and a familiar landmark, but which has been taken away. Also some 15 feet or more has been shaved off the curve so that it is not so bad now, though it is still a dangerous curve to take at full speed.

#### Improving the Dip

Down the back road another gang of men are at work improving things. Where the famous dip is located, a place where the road drops down abruptly and which causes a car to take a notion to do flying



PONTOON BRIDGE WORK TO GRAND STAND AT LOWELL

leaps if going at full speed, the highway is being widened. Big boulders that made the drivers dodge from side to side before taking the dip are being blasted away. The dip itself is being shaved off so that it is not such an abrupt drop now. When all these things are finished the work on the course will show tangible results, and the drivers who were here a year ago will be surprised when they come again.

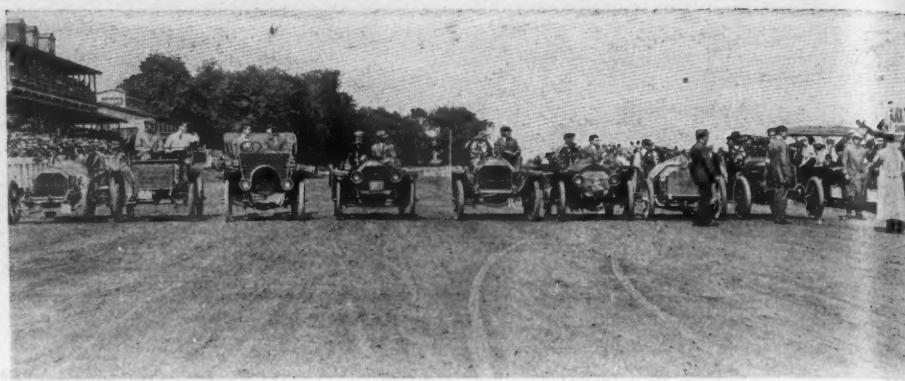
Chairman Hower and Fred Wagner were due here today for a short conference to go over the entries. They will go to Indianapolis and return immediately after the races there. They plan to get back here by August 23, for on that day the first practice spins will be made. Arrangements are being completed for camps along the course and for 2 hours every morning for 2 weeks preceding the race the roads will be closed for practice spins. At the last minute a couple of residents of Tyngsboro tried to get an injunction against closing the roads, but they were not successful.

The Lowell club has inspected hundreds of rooms and has made a list of them with their prices, so that anyone who engages one may know just what to expect and what to pay for it. There will be no high prices or chances for graft, for the entire body of citizens are interested in the success of the races. The mills will shut down on race days and it will be a week of general holidays. Already requests for parking spaces have come from all over the country.

#### More Lowell Entries

Lowell, Mass., Aug. 16—Entries for the National Stock Chassis Competition at Lowell, Mass., on September 6, 7, 8, are flying thick and fast. Nineteen additional entries were made on Saturday last, which augments the already large list considerably, and a score or more are expected within the next few days. Those made last Saturday include a string of ten Buicks to be driven in the various events by Louis Chevrolet, Strang, Burman, Ryall, deWitt and Arthur Chevrolet; three Maxwells, one Moon to be driven by Harold Brinker, the western crack; one Allen-Kingston, a Columbia, an Isotta, an 18-horsepower Mercedes, a Bergdoll and a second Apperson. Paul Laeroix has decided to swell the list of foreigners by putting a second Renault among the contenders, with Charles Basle as the pilot.

Walter Christie has entered his new 135-horsepower front-wheel drive racer in the mile straightaway competition and time trials on September 7 and Mrs. Cuneo will have her Knox Giant in the same, driven by Louis Disbrow.



STARTERS READY IN PHILADELPHIA TIME LIMIT RACE

## Philadelphia Holds Novel

PHILADELPHIA, Pa., Aug. 16—August is usually a month of inactivity among the local promoters of motoring events, and the writers of motoring happenings hereabouts took advantage of the lull last Saturday afternoon to put on a midsummer meet and gymkhana. The affair was pulled off at Point Breeze track and a fair sized crowd was present. It must be admitted, however, that the gymkhana stunts were not appreciated by the crowd. The plethora of entrants, all of whom seemed to believe that they were crackjacks at pegging potatoes hanging from an overhead wire, necessitated the running of the events in two heats and a final, which dragged the event so that it became monotonous, and the crowd began to get sarcastic before Jimmy Florida was finally announced as the winner and the officials cleared the barrels and other impediments off the track in order to continue the speed events.

The track was in poor shape, despite liberal oil and water treatment, the dry, porous soil absorbing the liquids with avidity. The preliminary practice had worn the turns so badly that Referee Stevens was inclined to insist upon another dose of medicine for the track before allowing the Point Breeze Marathon to proceed; but when it was pointed out to him that such a course would probably delay the finish till nightfall he relented. The dust was something frightful, but fortunately no accident of a serious nature occurred to mar the afternoon's sport.

#### Point Breeze Marathon

The Point Breeze Marathon, at 50 miles, furnished the only thrills of the day. There were four starters—the Heitmeyer Simplex fifty, driven by Frank Lescault, the 70-horsepower Welch, driven by Erwin Bergdoll; the Berliet sixty, with Willie Haupt at the wheel, and the little 18-20 Lancia, Al Poole driving. Getting away to a good start, Lescault soon forged to the front, followed by Haupt, Bergdoll and Poole, in the order named. The Simplex slowly but steadily increased the daylight between it and the Berliet until at the end of the thirtieth mile Lescault was

leading by nearly half a mile, the other two cars, which apparently were very evenly matched, having been lapped once by the leaders. Lescault maintained his advantage until the thirty-fifth mile, when in negotiating the particularly soft and dusty turn leading into the backstretch, he lost control of the car, and it plunged into and through the fence, fortunately catapulting its driver and mechanician onto the grass before turning turtle. Neither driver nor mechanician suffered anything worse than a few scratches and a general shaking up.

With the Simplex out of it, Haupt sent the Berliet to the front in a jiffy and with a lap advantage on the others he easily maintained his lead and landed a victory by a lap and a half. Al Poole made a sturdy fight to snatch the place from Bergdoll, but the big Welch was too much for the little Lancia.

Ralph de Palma was the big attraction of the day. In the 5-mile free-for-all, which was run in heats, best two in three, he easily staved off his only opponent, Frank Lescault, in the Simplex fifty, and won in the comparatively slow time of 5:35% and 6:02. In the 40-mile handicap, however, he gave the spectators a run for their money. He had to, for Al Poole, in the Lancia, was given a start of 1 minute 20 seconds, and Harry Davis in the Moon an advantage of 1 minute 45 seconds. It took seven laps and a half to catch Poole, who was leading, and the result was the establishment of a new 10-mile record for the track—10:59.

#### Summaries:

Five miles, \$1,251 to \$2,000, Frank L. Pott cup—Tom Berger, 35-horsepower Oldsmobile, won; time, 7:57. Cherie Borle, 30-horsepower Mitchell, second.

Ten miles, \$2,001 to \$3,000. George H. Stetson cup—H. Davis, 30-horsepower Moon, won; time, 12:56. Tom Berger, 40-horsepower Oldsmobile, second.

Five miles, free-for-all, best two in three heats, MacDonald & Campbell trophy, first heat—Ralph de Palma, 60-horsepower Fiat Cyclone, won; time, 5:35 2-5. R. Heitmeyer, 50-horsepower Simplex, second. Second heat—De Palma won; time, 6:02. Frank Lescault, Simplex, second.

One mile, city speed limit test, 12 miles an hour, Bailey trophy—J. W. Florida, 20-horsepower Locomobile, won; time, 5:02. Woods electric, second; time, 5:19 3-5. W. B. Danenhower, 18-horsepower Franklin, third; time, 5:30 3-5.

Ten miles, motor cycles, free-for-all, Gibson

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CARS READY TO START IN POINT BREEZE MARATHON

## Track Meet—Gymkhana

cup—B. J. Darling, one-cylinder Bradley, won; time, 15:05 2-5. J. E. Rockhouse, one-cylinder Indian, second.

Ten-mile handicap, free-for-all, Hotel Walton cup—Ralph de Palma, 60-horsepower Fiat Cyclone, scratch, won; time, 10:59. Al Poole, 18-20 horsepower Lancia, 1:20, second; H. Davis, 30-horsepower Moon, 1:45, third.

Point Breeze marathon, 50 miles, open to stock chassis, Quaker City Motor Club cup—Willie Haupt, 60-horsepower Berliet, won; time, 59:32. Ervin Bergdolt, 70-horsepower Welch, second; time, 1:01:10. Al Poole, 18-20-horsepower Lancia, third; time, 1:01:30. Gymkhana—Eddie Wilkie, Buick, won; Frank Lescault, Simplex, second; Tom Berger, Oldsmobile, third.

Mile time trial to beat track record 1:01 4-5—Ralph de Palma, 60-horsepower Fiat Cyclone; time, 1:01 4-5, 1:02.

### INSPECTS PARK RACE COURSE

Philadelphia, Pa., Aug. 16—This afternoon a procession of upwards of a score of cars, carrying Mayor Reyburn, several of his cabinet, the members of the park commission and other city officials, inspected the course over which the second annual Fairmount park 200-mile stock chassis race will be run, October 9 next. The sites for the various grand stands and the camps were discussed and various suggestions made as to the improvement of the course, although the entire route is in such excellent condition that the race could be run tomorrow if necessary. It was suggested that the camps and repair pits be established within view of the main grand stand, and this idea appealed so forcibly to the mayor and the other officials that the suggestion will in all likelihood be acted upon.

Since last fall's race the course has been improved in many ways, the formerly soft going along the West River drive having been packed down and rolled after several applications of oil. These oil baths, by the way, have appealed mightily to the park commissioners, who are nothing if not conservative. After witnessing the way these applications kept down the dust during last year's race, and having seen with their own eyes how the oil acted as a binder, packing and cementing the small stone, they have quietly experimented with various oil preparations, and as a result quite a few additional stretches, always dusty in dry weather, are even now, after a 6-weeks' drought, in ideal condition.

The attention of the inspecting party

was called to the fact that along the entire 8-mile course there is hardly a spot where a fast car cannot pass a slower one; ninetenths of the route can accommodate three or four speeding cars abreast. Secretary Harbach has announced the entries of four cars up to date: Acme, Malin-Leinau, Palmer-Singer, William Wallace, Jr.; Simplex, John F. Betz, 3d, and a fourth car, to be driven by Herbert Lytle.

### LONG RUN BY ELECTRICITY

Philadelphia, Pa., Aug. 14—Driven by George W. Daley, representing the local agent, and W. S. Crammer, who is connected with the factory, there arrived in this city last week a Woods electric Victoria which has set a mark for continuous driving over a hard route. For 29 days the Woods traversed the various sections of Pennsylvania, stopping at nearly every prominent town in the state and covering 1,275 miles. An average of 59 miles was covered on each charge of the batteries. Pittsburgh was the outer mark, and the Ebensburg and Buck mountains, between Altoona and the Smoky City, were negotiated with ease, as was the mountain road at McConnellsburg. Anyone who has made the round trip from Philadelphia to Pittsburgh and return knows the wear and tear such a route means to a car. Considering the large proportion of mountain work and the consequent rapidity of battery exhaustion, the average traveling radius per charge is high. The car is of the same type as that which made the round trip from Philadelphia to Atlantic City on one charge some weeks ago.

### CALIFORNIA'S OCTOBER RACE

San Francisco, Cal., Aug. 17—Special telegram—Saturday, October 23, was today officially designated as the date for the great road race to be held in Alameda county, just across the bay from San Francisco, in connection with the Portola celebration to commemorate the discovery and rebuilding of San Francisco. The grand prize in the big car race will be a \$5,000 trophy to be known as the Portola cup, and in the small car race there will be a trophy

valued at \$1,000. Cash prizes of \$800, \$500 and \$300 are to be given respectively to first, second and third drivers in the big car race, and \$250, \$150 and \$50 to drivers in the small-car contest. Cars eligible for the big race must list at \$2,950 or over and have cylinder displacement of 280 inches or over, and in the small car race cars must list at less than \$2,950 and have cylinder displacement of less than 280 inches. The course to be covered is a long stretch of county road in fine shape and an equally long stretch of foothill boulevard. Connecting the two at either end is a stretch of a few hundred yards. This course was fully described and illustrated in Motor Age of July 29. The distance in the small car race will be 200 miles and for the big cars 300 miles. The racing is to begin at 8 o'clock in the morning.

### GOOD MEET AT SPOKANE

Spokane, Wash., Aug. 12—The race meet Tuesday was a decided success. The track record for 5 miles was twice broken during the afternoon, first by Harry Bell when he made the circuit ten times in 6:26; then by J. A. Stoner, who covered the first 5 miles in the 20-mile race in 6:23%. Both drivers used Stoddard-Dayton cars. Stoner has just established a new mark for 5 miles, putting the Stoddard-Dayton car, owned by Fred Bennett, around the track in 6:23%. He made his 5½ miles in 7:01, the time for the Locomobile being recorded at 7:22, but did not finish, and the 10-mile race scheduled for the next event was called off. Stoner's fastest mile was 1:16%. The 5-mile race for cars costing \$1,250 to \$2,500 was the closest and most exciting of the afternoon. It was finally won after three heats by the E-M-F, owned by John Campbell and driven by Al Davidson. Harry Bell drove Arthur Cowley's Stoddard-Dayton over the 5 miles in 6:26, which broke the record of July 5 held on the same track by 6 seconds. Bell's fastest mile, however, was only 1:16%. Henry Pebbles' little Buick made a runaway race of the event for light cars and covered the 5-miles in 7:27%. The crowd in attendance passed the 3,000 mark, which will leave the motor club \$1,000 above expenses, which will be turned into the good roads fund. The Locomobile, owned by Dr. C. E. Sears and driven by O. E. McCarthy, with Ernest Rennison mechanic, plunged through the fence when rounding one of the turns and threw both driver and mechanic out, injuring McCarthy, while Rennison escaped with minor bruises. The Machine was badly damaged.



## DELAYED SANCTION SLOWS MINNEAPOLIS

**M**INNEAPOLIS, MINN., Aug. 16—Having waited until the last minute for a sanction, the tours and contests committee of the Minneapolis Automobile Club, arranging for the annual Tribune reliability run which will be held to Duluth and back this year, held a council of war which lasted far into the night on Friday last. As a result President Horace Lowry, of the local club, sent a telegram to H. E. Coffin, of the M. C. A., to the effect that the "Minneapolis tours committee has complied with all the requirements of your letter of July 30, to which we now hold you, and demand sanction at once." This brought a reply Saturday erroneously addressed to F. M. Joyce, president of the Minneapolis Automobile Club, granting the sanction and signed F. B. Hower. Mr. Joyce is president of the Minnesota State Automobile Association, and not of the Minneapolis Automobile Club. This telegram commanded Joyce to tell Dr. Dutton, chairman of the contest committee, that sanction was granted.

The trouble arose over a failure on the part of Messrs. Coffin and Hower to want the same things in the rules of the Tribune run this year. Mr. Coffin's letter made a particular point of the price classifications, and appointment of observers. These points were acceded to by the Minneapolis committee which, however, wanted to retain the economy and sealed-bonnet features of the run, as they appeared in the rules of last year. This reliability run is really a 3-year contest, and it was deemed unfair to the contestants to materially change the rules on this, the second leg of the contest.

Chairman Hower demanded Glidden rules, which fail to show any penalty for broken seals, and which assess demerits against a car according to how fast a mechanic or driver can make repairs. For instance, one of the Glidden cars, with a broken spring, had this spring replaced in 45 minutes, for which the car was taxed 4.5 points. According to the Minneapolis club's rules a broken spring cost not to exceed 105 points, at so much per leaf. And other penalties were fixed in like manner, irrespective of the time taken at the end of the run to make repairs. The rules as they now stand embody the more important features of the A. A. A. rules for reliability contests, only contestants will be taxed according to a fixed list of penalties for results shown by the final examination. Road repairs, of course, count at so many points per minute per man.

Orders were given the printers at once and the entry blanks were distributed Saturday and the rules followed Monday. This leaves but a very short time for entries, which, according to A. A. A. rules, must close in this instance on Friday night, August 20. Whether a good showing can be made in 5 days' time is a question, but the Minneapolis committee means business and in spite of this handicap imposed on

their efforts by the A. A. A. contest board will go the limit in arranging a good entry list, if such a thing is possible. A field of twenty or twenty-five cars would have been possible had more time been allowed. Further postponement is not desirable because of the state fair show and other contests already arranged for.

Arrangements are about complete for the little Glidden tour which starts from in front of the Tribune building, Minneapolis, Friday morning at 7 o'clock, to run to Fargo and return, taking 5 days. This term little Glidden is given the run because of the fact that Glidden rules will obtain throughout the run, with the exception of the final examination. This was decided upon because of the fact that this event will be largely an owners' tour, although a few dealers will enter cars. The mileage from Minneapolis to Fargo is 176 and the return trip will be 185, the return being made via Waupeton, Wheaton and Litchfield. In all it is thought there will be twenty-five or thirty cars entered. The average running time will be 15 miles an hour and many of the entrants will take their wives and women friends with them.

The first trophy offered was put up by the St. Paul Dispatch and is a \$300 affair which is to be contested for each year. Another trophy, to be announced later, has been offered by the Minneapolis Tribune, to the county commissioners in whose county the best roads are found on the tour. Colonel F. M. Joyce, president of the Minnesota State Automobile Association, also has given a silver cup for the runabout making the best showing in the tour and H. S. Johnson, tours and contests committee chairman of the state association, also has hung up a cup for the touring car making the best showing. These two cups will become the property of the winners at once.

Several of the affiliated clubs in the state will also have cars entered representing them. Good roads meetings have been held along the route of the tour under the direction of the Tribune and much interest has been aroused over the good roads prize. This is the first event of this character ever held by the Minnesota state association and probably will be an annual event hereafter.

### KANSAS TOUR BOOMING

Kansas City, Mo., Aug. 14—There's a surprising amount of enthusiasm manifested by local motorists and dealers in the Star trophies tour which begins September 20 on a circling run through Junction City, Kan., Lincoln and Omaha, Neb., and St. Joseph, Mo., in all a distance of about 800 miles. The duration of the tour will be 5 days, with the final control in front of the Star office Friday afternoon, September 24. The Studebaker-Garfurd pathfinder reached Omaha today and will now be

headed southward for Kansas City. The A. A. A. rules as applied to the recent Glidden tour have been adopted practically as a whole by the Automobile Club of Kansas City and the run promises to resemble the Glidden in stiff schedules and running regulations. At present writing the indications are that more than 100 cars will start and preparations are being made at control stations to take care of that number. Almost every high-priced car represented in Kansas City will be entered in the dealers' class. H. E. Rookridge, president of the Kansas City Dealers' Association, in a speech at the automobile club Thursday night offered to guarantee the entrance of over fifty cars by the trade. Entries will be taken beginning August 18, at which time the pathfinder should have returned with the route mapped out.

### THREE IN MOUNT BALDY RACE

Los Angeles, Cal., Aug. 14—The fourth annual Los Angeles-Mount Baldy race will take place September 19 over a course measuring 101 miles, and there are just three entries—an Apperson Jackrabbit entered by Leon Shettler and to be driven by Harris Hanshue; a White entered by F. C. Fenner and to be driven by J. Seyfried; and a Pope Hartford, entered by William R. Ruess & Co., and to be driven by Ruess himself. The race this year will surpass any of the others in interest. For the first time it will bring together three cars instead of two. Time close to 3 hours is being predicted and with fast cars and daring drivers it is a certainty that all former marks for the run will be shattered. The distance from the starting point in Los Angeles to the end of the mountain road on top of the North Baldy is 101 miles and for miles the going is anything but boulevard-like. The course leads over the San Fernando road through the towns of Burbank and Fernando to Freemont pass, where the racers will be forced to climb one of the steepest grades in the country. It is not a long grade, the hardest part of the pull being within the last few hundred yards. Once over this there is a drop down to the little town of Newhall. A few miles on and the road turns to the east just beyond Saugus. The towns of Lang, Ravenna and Acton are passed before the Mojave desert heaves in sight at Palmdale. The Soledad canyon is always sandy and driving and the ability of the car to pick up quickly will count. There is an 11-mile dash across the desert to Little Rock over fairly good desert road. From there on it becomes rocky and rough and at Shoemaker's begins a 9-mile climb to the mountain top. With the possible exception of the Los Angeles-Phoenix course, this run to Baldy is the severest test to which a car could be put. It is not a road race over smooth boulevards with few hard turns. The dash is over roads as they are found in the country and

these particular roads have never been known to have been any too good. They are rough and rutty with terrific grades, dangerous turns, deep sand with the finish over 9 miles of heart-breaking mountain grades. A telephone line covers the entire 101 miles and spectators gathered at any of the stations along the line can keep tab on the racers at any stage of the contest. The cars will start 30 minutes apart.

#### SWEDEN HOLDS A TEST

Stockholm, July 31—An Itala car, driven by H. Christiansen, was the winner in the reliability trials or tour of the Swedish Automobile Club, which ended a few days ago. The tour started from Haparanda, and ended here in Stockholm. It was a 6-day affair, the daily mileage being respectively 90, 179.7, 83.2, 113.1, 158 and 113.1 miles, or a total of 745.1 miles. It was the longest tour of its kind ever promoted in either Sweden or Norway and because it was generally thought that it would be too much of a task, too strenuous on men and cars only nine entries were forthcoming, all starting, however. The cars which took part in the 6-day run were a Cadillac, a Horch, an Itala, two Piccolos, a Frayer-Miller and three Durkoppes. The Piccolos were small cars as compared with the Italian and German vehicles, yet they made a most conspicuous record for 6-horsepower cars. The Itala was the only one to come through with a perfect score, but the Cadillac made a fine showing and finished second. A Durkopp took third prize and a Horch fourth.

#### TREGO CHAIRMAN AND REFEREE

Washington, D. C., Aug. 14—Frank H. Trego, secretary of the Chicago Motor Club, has been selected for the post of chairman and referee of the Frank A. Munsey reliability contest from Washington to Boston and return, September 21-29. He was in Washington yesterday and had a conference with the managers of the contest. Nineteen cars are now entered in this contest and it is confidently believed the list will reach thirty-five by the time the entries close on September 11. The latest entries include two Croxton-Keetons, entered by the Croxton-Keeton Motor Car Co.; a Spoerer, entered by the Spoerer's Sons Co., of Baltimore; a Corbin, by the Corbin Motor Vehicle Co., and a Columbia, by Frank P. Hall, of this city. The last named is the first private owner to enter the contest. The Chalmers-Detroit pathfinding car reached Boston early in the week and is now making the return trip via New York.

#### RESULTS OF SWISS CLIMB

Geneva, July 31—This year's winner of the contest for the Megevet cup is Nigg, who drove a four-cylinder 12-horsepower Fiat, 3.1 by 5.1, weighing 3,385 pounds. Nigg covered the course of 5.8 miles up hill from Gimel to the Marchairuz pass in 17 minutes 33 6/10 seconds, which was

#### Conditions Are Named In Flag-to-Flag Run

Denver, Colo., Aug. 15—Announcement is made that the flag-to-flag endurance and reliability run for the trophy offered by George A. Wahlgreen over a course extending from Denver to the City of Mexico will start Monday, October 25, with the finish coming during the week of November 15. The route will take in Amarillo and San Antonio, Tex.; Eagle Pass, Monterey, Zacatecas, Aguascalientes, Celaya, San Juan del Rio, Tula and the City of Mexico. Six classes are provided for, with a trophy for each class winner. Class 1 will consist of cars listing at \$4,000 and over; class 2, from \$3,001 to \$4,000; class 3, \$2,001 to \$3,000; class 4, \$1,251 to \$2,000; class 5, \$851 to \$1,250, and class 6, \$850 and under. Before the border is reached the daily running time will be 9 hours or more, class 2 exceeding class 1, 20 minutes; class 3 exceeding class 1, 40 minutes; class 4, 60 minutes; class 5, 80 minutes, and class 6, 100 minutes. When the daily running time is greater than 7 1/2 hours and less than 9, class 2 will exceed class 1, 15 minutes and each of the other classes will show a similar increase over its predecessor. Also there is to be 10-minute jumps should the running time be 7 1/2 hours or less.

There are to be seven controls, the first one being at Torreon, in the state of Mexico, each of the contestants being allowed 5 days 4 hours to make it. The second control will be at Zacatecas, state of Mexico, and 2 days will be allowed for the run. The third control will be at the city of Aguascalientes, with 8 hours allowed to make it. The fourth control will be at Celaya, the running time being 2 days. The fifth control is at San Juan del Rio, 1 day being allowed to make it. The sixth control is at Tula, 1 day's journey, while the seventh control is at the City of Mexico, 7 hours being allowed.

In a general way the rules for this run greatly resemble the Glidden regulations, penalties being allotted for being late at controls, for road repairs, replacements and adjustments, except adjustments of carburetors, ignition systems, brakes, clutches and the flow of oil, and deterioration as shown by a final examination. The pace-maker will leave San Antonio and keep about 1 or 2 days in advance of the contestants from Eagle Pass to the finish and no one will be allowed to pass the pace-maker as long as he can keep going. Pullman and dining car service such as was had in the Glidden will be had, but it is anticipated that it will be difficult keeping in touch with the railroad at all times.

generally considered a fair time for a heavy touring car upon a road having an average gradient of 10 per cent and up to 16 per cent in its steepest part. Two score cars and over a dozen motor cycles tried for the many trophies that were pro-

vided for the contestants. There were events for amateurs and others for professional drivers, for cars with two, four and six cylinders, for single and for two-cylinder motor cycles. The best time of the climb among all the contestants, motorists or motor cyclists, was that made by Beck, in class 6. He went up the 5.8 miles in his 60-horsepower Martini, 5.3 by 5.5, in 10 minutes 25 6/10 seconds. The car weighed 3,537 pounds. The winner among the six-cylinder cars was Perret, in a 15-horsepower, 3.3 by 4.7, Delaunay-Belleville. His time was 20:59 6/10. Megevet, donor of the trophy bearing his name, won the Borgeaud cup, but in a roundabout way. This trophy was offered by Borgeaud to the amateur who made the fastest ascent. He himself captured the prize by going up the hill in 13:09 4/10 in his 40-horsepower Cottin-Desgouttes, but being a real sportsman he would not accept his own offered prize and therefore it went to Megevet, who had made the second best time with his 40-horsepower Fiat. The special prize offered for a team of three cars was won by the manufacturers of the Stella cars, the Martini cars taking second place.

#### LOCOMOBILE WINS MATCH RACE

Los Angeles, Cal., Aug. 16—Special telegram—For the second time the Locomobile has beaten the Stearns in a local match race, winning a 300-mile event at Ascot park yesterday by 145 miles. The Stearns, ably handled by Charles Soules, was making a great race, having a lead of 5 miles over the Locomobile driven by W. Orr, when a crankshaft broke, putting the Stearns out of the race. Cooney Slaughter, the local Stearns agent, lost \$10,000 as a result of the broken shaft. A second Stearns was allowed to start to entertain the crowd of 5,000 people. This Stearns jumped to the front at the start and had a mile advantage before 5 miles had been covered. Both cars were forced to stop several times for tire changes.

#### SUPPORTING OLYMPIA SHOW

Brussels, Aug. 3—There is quite some talk about the large list of exhibitors for the November show at the Olympia, London. The fact that many of the leading French manufacturers' names appear makes some of the Belgian dealers think that the French makers were more or less trying to fool everybody by yelling "No show in 1909." In addition to nearly every important car maker of England, the names on the list indicate that the newest Renault, Peugeot, Lorraine-Dietrich, Panhard, Chenard-Walcker, Bollee, Berliet, Niclausse, Legros, Delage, Sizaire-Naudin, Darracq, Benz, Itala, Austrian Daimler, Metallurgique, Minerva, Germain, Laurin-Klement, N. A. G., Adler, Opel, Turicum, Vivinius, and last but not least, the American cars, White and Buick, will be shown. The parts and accessories section will have the wares of nearly every big concern, especially among the tire makers.



THE TOURIST CARS LINED UP ON THE ROUTE

LOS ANGELES, CAL., Aug. 14—Thirty-six Tourist cars—gaily decorated with the official red and white pennants and loaded with nearly 150 enthusiastic motorists—lined up before the Tourist factory in Los Angeles on the morning of July 3 for the start of the second annual tour of the Tourists—the first motor tour to cross the borders of romantic old Mexico. Last year the Auto Vehicle Co., builder of the Tourist cars, conducted its first tour in the form of an endurance run from Los Angeles to San Francisco and return. Twenty-one cars entered for this event, twelve finishing the 1,150 miles with perfect scores.

After careful planning, the tour this year was shortened to 500 miles, yet this 500 miles included road and climatic conditions typical of the widely-diversified conditions met with by the Pacific coast motorists. Five days were to be taken—from July 3 to July 7. Down the coast line from Los Angeles to San Diego; a day's journey into old Mexico; back to San Diego, and home by the inland route to Los Angeles, via Riverside; together with a run up San Antonio canyon to Camp Baldy—a mile above the sea—and many other short side trips.

Early in June, the pathfinder car, driven

by Volney S. Beardsley and L. R. Wadsworth, of the Tourist company, went over the route, marking the way with road signs and carefully determining the mileage and running time to be allowed between the several controls of the tour. Long before the starting day, each entrant was furnished with an itinerary booklet containing the rules governing the tour, maps, running time and pictures identifying doubtful places along the tour. At 5 o'clock the entrants began to arrive, positions in line being given in the order in which each car arrived.

Precisely at 5:40 the pilot car was off with its load of confetti and road signs. Thirty minutes later, the pace-making car was checked out, followed at intervals of 1 minute by the long line of entrants. The driver of each car, upon leaving, received a card filled in with the hour of leaving, with 1,000 points to his credit. A minimum and a maximum time was given to reach all controls, giving a leeway of 30 minutes. A driver, to receive a perfect score, had to reach all controls within this time, otherwise 1 point for every minute ahead or late of schedule time was deducted. At the arrival at each control, these cards were taken up, the hour of arrival

## The Second Annual Tour of the Tourists

and departure noted; and returned to the drivers as they checked out on each new stage of the tour.

The first day's run was to San Diego, 136 miles. This is a charming stretch of country and the day was a gay and lively one. The tour had been well advertised and all along the road the good people of the villages and farms were out in force. The cars left Los Angeles by the long First street viaduct, through beautiful Boyle Heights and on to the King's highway—the road which has been so great a factor in bringing California to its great advancement of today. Through the modern little cities of Orange, Anaheim and Santa Ana, to San Juan Capistrano, it went, where a light basket lunch was partaken of in the shade of the ruins of old Capistrano mission. This once imposing structure—built a century ago—is the scene of the popular novel, "For the Soul of Rafael." For 40 miles after leaving Capistrano the road followed close to the ocean shore, the mighty Pacific being in sight most of the time. San Luis Rey mission was passed 90 miles out, and at 1 o'clock the cars began to arrive at Oceanside, 96 miles, where the noon control was located. After a hasty lunch at the San Luis Rey hotel the tour was once more under way. From Oceanside to San Diego was a run of 40 miles, through La Costa, Encinitas, Del Mar and La Jolla.

San Diego was reached about 5:30 and after the cars had been checked in at the Tourist agency all took the ferry to Hotel Del Coronado, the headquarters for the stay at San Diego.

Sunday, July 4, was a day of rest at Coronado. Some took little trips about the city, although the majority preferred to loaf around the hotel and its beautiful grounds.

For July 5 there was a double bill—a trip around Point Loma, back to San Diego, then to Tia Juana and the Mexican Hot Springs.

The drive back to San Diego was a real privilege. Along the summit of the promontory, past Madame Tingley's famous



THE TOURISTS' TOUR IN OLD MEXICO—PILOT CAR OUT OF FUEL

## A One-Make California Road Contest

home of American theosophy and on to the Point Loma boulevard—one of the best-built motoring roads in the United States, which, after the ragged road just passed, was thoroughly enjoyed.

No car can cross the Mexican border for any distance without being bonded. This detail, however, had been attended to by the tour management, so after but a cursory examination at the Mexican custom house, the cars sped on through Tia Juana to the hot springs. There is no line to indicate the international boundary, yet one knows instinctively when he is Mexico. Immediately the road ceases to follow section lines and becomes a rambling cross-country trail, full of chuck-holes and dust. The well-improved farms with their modern homes and improvements disappear, and in their place are passed dirty adobe houses surrounded by broken-down rail fences and packs of dirty-faced children who show rows of remarkably white teeth in their welcoming grin. This is Mexico—the sleepy old land of the Aztecs—which is just now beginning to awake to its possibilities after the sleep of centuries. While the United States has made its bounding leaps to the very front of the world's nations, this country has dozed along in its mananna atmosphere—"not today; perhaps tomorrow."

At the hot springs the tourists partook of old-time Spanish hospitality. A yearling beef had been barbecued by a master chef, and this with the basket lunches brought from Hotel Coronado quickly disappeared in the shade of the mighty live oaks which fill this beautiful arroya.

Tia Juana—a squalid Mexican town—with its several stores of curios—was visited on the return to San Diego. These stores are run by Yankees and are correspondingly prosperous, making a sumptuous livelihood from the American tourists. As they left Tia Juana, every machine contained some souvenir—more or less expensive—of Aztec land.

Tuesday, July 6, promised to be a hot day—and it amply fulfilled its promise. The day's trip was to Riverside, a distance



THE TOURIST CARS IN OLD MEXICO LANDS

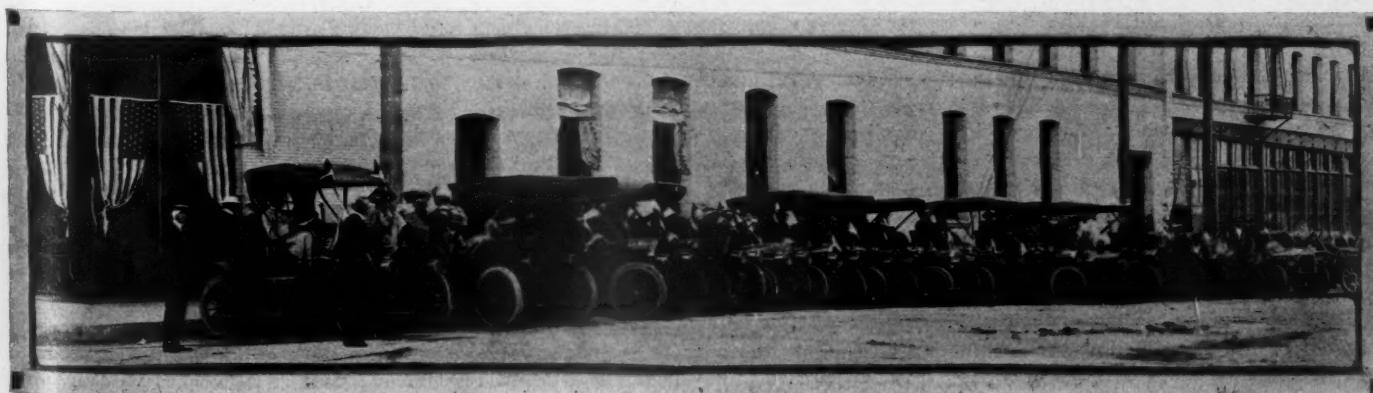
of 130 miles, with an hour's stop for lunch and necessities at Escondido, 40 miles away. After leaving San Diego, Poway grade was encountered. For most of the way into Escondido an uphill grade, but the roads were excellent, thanks to the unceasing efforts of E. W. Scripps, the California millionaire of newspaper syndicate fame.

From Riverside the road to Corona led for miles along Magnolia drive. Through Corona, Rineon, Pomona and Ontario contingents of local Tourist owners, dropping in line all along the route to participate in this day's run. From Ontario for 13 miles to Camp Baldy was a continuous, steep climb, with no deviations whatever. After passing the toll gate, the remaining 6 miles to the camp were steeper than ever, a narrow, winding mountain road, with sudden and unexpected curves; on one side a steep mountain wall, on the other, sheer drops of hundreds of feet to the glistening mountain stream in the canyon below.

On this climb, a most remarkable record was made. Every car made the climb with a perfect score to Camp Baldy, a resort almost to the summit of Old Baldy, 1 mile above sea level. After luncheon at this resort and several hours spent in sight-

seeing, the cars were checked out on their last  $\frac{1}{2}$  day's run. A difficult task was accomplished in climbing this mountain and now came even as great a one to get all the cars down the dangerous grade without a mishap or accident. With the ignition system shut off, with clutches in mesh making the motors help hold the cars back by the use of the compression, and with brakes set, the car ran down the mountain for 11 miles without power. The afternoon's run was comparatively an easy one, of 54 miles, passing through Claremont, Glendora, Azusa, Monrovia, the famous Baldwin ranch, Pasadena and back to the starting point, Los Angeles.

Near the city the tourists were met by a large delegation of Tourist owners who escorted them through the city, back to the Auto Vehicle Co.'s factory, where all cars were checked in, cars examined and score cards placed in the hands of the judges. Careful checking of score cards showed that out of thirty-six cars which started twenty-six finished with perfect scores. Special mention by the judges was made of all the entrants of the remaining ten cars that did not complete with perfect scores, many of which only lost a few points from minor troubles.



LINEUP OF TOURIST CARS AT FACTORY BEFORE THE START

## TOURISTS STIR UP INTEREST IN GOOD ROADS

TOLEDO, O., Aug. 14—There never was a time when motor touring was so popular as it has been this season in this vicinity. Parties numbering from one to a dozen are not only almost daily occurrences but numerous tourists are in the city many days, and it is rare that there are not a few to be found. They come from every section of the country, far and near, and so common has it become that guests from cities and towns surrounding within a radius of 50 or a 100 miles attract no attention.

Not only has the growing popularity of the motor car been responsible for this, but a number of other features have lent their influence toward bringing in tourists. In the first place the roads have been so greatly improved that motoring has been transformed from a task to a positive pleasure in every sense of the word. Thousands of dollars expended all over this section have wrought wonders in road-building, and this with the ideal weather conditions have brought about an almost perfect system of highways. Then Toledo has offered many special attractions this season to car owners in the numerous conventions, shows and special features which have been pulled off. This, added to the natural attractions in the way of beauty spots, parks, points of historic interest, and nearby pleasure resorts, has kept the local garages crowded with visiting cars most of the time.

The improvement of highways continues unabated. The Lucas county commissioners have sold another batch of bonds amounting to \$64,640, at a premium of \$2,112, the highest ever paid for bonds in this county. Another series of road bonds amounting to \$16,670 was also placed at a handsome premium. Pike improvement bonds to the amount of \$4,200 were awarded during the week Gallipolis, road bonds of \$4,500 for the purpose of building stone roads at Wauseon, and \$10,000 of piking bonds were placed at Bucyrus. That this money is being spent as fast as available is shown by the large number of contracts which are being awarded. Among the better recent awards made here was a contract to Russell & Jennison, of Toledo, to improve about 3 miles of roads leading into Toledo at their bid of \$20,970. The road will be macadamized.

The great question now, and the one which appears to overshadow all others, is how to raise more money for road improvements, and how best to preserve them from undue wear and tear. Many experiments are now being worked out with more or less success in the matter of road building, and the proposition is being rapidly reduced to a science in Ohio. Numerous plans are brewing having for their ultimate object the securing of better highways and it is probable that the next session of the Ohio legislature will be one

long to be remembered for its activity along that line. Despite the great activity of the present season it must be said that road making is still in its infancy in Ohio, and the propositions which will receive the attention of law-making bodies as well as good road organizations from now on will be not alone how to secure the largest fund for the work without oppression, but how best to expend the money raised without waste or extravagance, and to secure the most for the funds expended.

Fred S. Caley, state registrar of the motor car department, in speaking of this matter recently said: "The sentiment among the members of the legislature as expressed at the reunion last week was decidedly in favor of amending the law at the next session. The cry there was for more revenue, and while there is no specific proposition to make this department a general revenue producer, the fact was brought out that increased appropriations for roads would be asked next winter, and what is not furnished by this department will have to be placed in the general appropriation bill. I should not be surprised to see the Massachusetts law practically adopted here, at least so far as the sale of license fees runs. That would not increase the annual fee upon the lighter machines, but it would double it on the big road cars—that is to say, the 40-horsepower cars and over. The road engineers tell us that those are the fellows that are doing the most damage to our improved roads. I should say that such an amendment to the present Ohio law would practically double our revenue and make this department a revenue producer well up to the quarter of a million mark in another year."

### SEEK TO CLOSE ROADS

BOSTON, MASS., Aug. 14—The first petitions brought under the new motor law that gives selectmen the right to petition the highway commission for permission to close certain roads to motor cars were heard Wednesday when the selectmen of Milton and Sharon appeared in support of their claims that some of the roads in their towns should be closed. The Milton petition had but one person favoring it and so it was quickly heard. With Sharon's petition it was different. Three selectmen and four residents stated Sharon's case, while an equal number were opposed to the petition. One of the men who appeared against granting the petition made a rather telling point. He stated that he was not a motorist, but that on July 4 if it were not for a motor car that brought a physician on a hurry call to his son the latter would have been seriously injured as the result of an accident. Chairman Parker of the highway commission suggested that the selectmen might give special permits to physicians in case roads were closed. No decision was reached by

the commission, but the outcome is awaited with interest as it will establish a precedent in the Bay state.

### MORE INSPECTORS NEEDED

ROCKLAND, ME., Aug. 14—Paul D. Sargent, state highway commissioner, at the annual meeting of the County Commissioners' Association of Maine, declared that twice as many inspectors should be supplied in the building of state highways in Maine as there are at present at work. Where there are twenty now there should be at least forty, he said. He went on to draw a comparison with Vermont, stating that the state highway commissioner of Maine and the selectmen should employ inspectors at the joint expense of the state and towns so that someone may have constant supervision of the work. He cited one instance where one inspector in Maine has at present 125 miles of territory to cover, and he said that under such conditions the best results could not be obtained. He stated that Maine is building 475 pieces of state road at an approximate cost of \$275,000, exceeding the expenditure made in any of the last seven years that state roads have been built. Next year work on the trunk lines will begin as soon as the appropriations are available, he said.

### AFTER INTERNATIONAL HIGHWAYS

DENVER, COLO., Aug. 16—To build an international highway from the Republic of Mexico to the Yellowstone park is the proposition that will be advanced when the trans-mississippi congress meets in Denver. Judge C. J. Gavin, father of the state road now under construction near Trinidad, is the originator of the idea. A 30-mile strip between Starkville and Raton has been completed by convict labor, and the experiment has met with such great success that it is believed this will form the nucleus for the international road.

The Colorado convicts from the penitentiary at Cañon City did the work in Colorado, and the New Mexican convicts from Santa Fe worked the end in that state. The camp of the Colorado convicts has become famous the country over for the manner in which it is conducted and the success which has attended the system. The guard over them is merely perfunctory. No arms are kept in camp, and although a rigid system of discipline prevails, the prisoners have found the work so much more pleasant than life at Cañon City that they consider themselves fortunate when they are sent to the camp. They are allowed a certain time off for their work on the road, and few have tried to escape from the camp.

The New Mexican convicts are working in the vicinity of Cimarron and they are moving south to connect with the scenic highway at Las Vegas. El Paso is the ob-

jective point. The state of Texas will co-operate and undoubtedly the government of Mexico will carry the road on through the republic. The state of Colorado will build the road from Trinidad through Walsenburg, Pueblo, Colorado Springs, Denver, Fort Collins and to the Wyoming line. From there it will be carried on to the Yellowstone park.

A bill authorizing the starting of the road has been introduced by Senator Casimero Barela. The line is along the old Camino real, or King's highway, over the Raton range. The territory of New Mexico has made provision to take up the work on the other end. The cost of the work is nominal, compared with what it would be without convicts. It would require so many millions of dollars to build the highway under any other system that it would be almost out of the questions. With all the states co-operating in the use of their prisoners the expense is reduced to a minimum.

The Colorado road is about 15 feet wide on an average. In many places the convicts had to blast through solid rock for considerable distances. The highway traverses a picturesque country, and the drive is wonderful from a scenic standpoint. It is planned to have the highway follow the routes which touch the most historic places of the west.

#### TO TAKE ROAD CENSUS

Boston, Mass., Aug. 14—The Massachusetts highway commission is to take a comprehensive road census during the summer and fall in order to secure information about the use by different kinds of vehicles of the state highways. The arrangements are practically completed for the first period, which will begin at 7 a. m. Sunday, August 22, and end the following Saturday evening at 9 p. m. The other period will be some time during October. The August census is intended to include what is considered the season of heavy tourist travel over the roads, whereas the October census the conditions of traffic are expected to be normal. Questions of the relative use of the state highways in different sections, and the popularity of the various through routes and their bearing on maintenance costs are constantly arising before the commission, and it never has had any accurate data upon which to base estimates. It has therefore decided upon the census to secure at least a rough estimate of the value of such routes from the point of view of the motorists. While road censuses have been taken from time to time on small thoroughfares no such large one as now planned has ever been taken.

There will be something like 200 stations established, so that the census may be complete. At each station an observer will be stationed each day. At eleven places on main routes a 24-hour count will be made. The 24-hour stations will have Boston as a basis and cover in a circle some of the surrounding cities within a

#### Westerners Take Hint: Inspect Bay State Roads

Boston, Mass., Aug. 14—One of the first evidences of the value of sending the Glidden tour up through Minnesota to Minneapolis was the arrival of a party of officials from that city in Boston yesterday to go over the roads of the Bay state and learn how they are constructed and kept in repair. The party comprises Chairman Frank W. Cook, J. W. Williams, William M. Knight and R. J. Upton, the Hennepin county road commissioners; Frank Haycock, county surveyor, and Murray Davenport and Leo Harris of the Minneapolis Tribune. When the Glidden tourists were in Minneapolis Charles J. Glidden advised the officials there to visit Massachusetts and New Jersey and get a good idea how roads were constructed, stating that it would pay because of the valuable information they would get. The advice was heeded quickly, which shows how the western people do things once they get going. On arriving in Boston they were taken out over the boulevards and saw how well-constructed and laid out were the parkways. Another trip took them out over the state highways, where they were shown how the highway commission not only constructs roads but also builds bridges, all with an eye to beautifying the landscape. Chairman Cook stated that \$1,000,000 had been appropriated by the legislature for building roads, and before spending the money they wanted to get some ideas from other states where road construction had been under way for years. Before reaching Boston the party stopped at Detroit, Cleveland, Buffalo and Albany, where the different modes of construction were examined. Chairman Cook was surprised that most of the Bay state highways were constructed of gravel and macadam preparations, while out in Cleveland he found long country roads of brick, with gravel stretches for heavy teaming. It is planned to build the best possible roads from Minneapolis to Lake Minnetonka, and to the Automobile Club of Minnesota, the two places where the Glidden tourists were entertained. The Glidden visitors were surprised to find two such pretty spots so near the city and the roads to them so wretched. The party leaves Monday for New Jersey, and then will return home.

25-mile radius. The metropolitan park commission has been asked to aid in the work by taking a census on its parkways also. Although the commission would like to go into details and secure such items as weight and width of tires it considers that too expensive, at least for the present. For the purpose of the census traffic will be divided into six divisions, and the daily observation periods into 2-hour sections. The work will be done under the supervision of the division engineers and cards are being printed so that the data will be very complete. The vehicles will be divided as fol-

lows: Single horse with light vehicle, single horse with heavy vehicle, two or more horses with light vehicle, two or more horses with heavy vehicle, motor runabout, motor touring car. Motor cycles, bicycles, cattle, or pedestrians will not be included. The weather conditions also will be noted. At the end of each day's work the cards will be immediately mailed to the highway commission. It is estimated that the cost will amount to about \$5,000.

#### VIRGINIANS INTERESTED IN ROADS

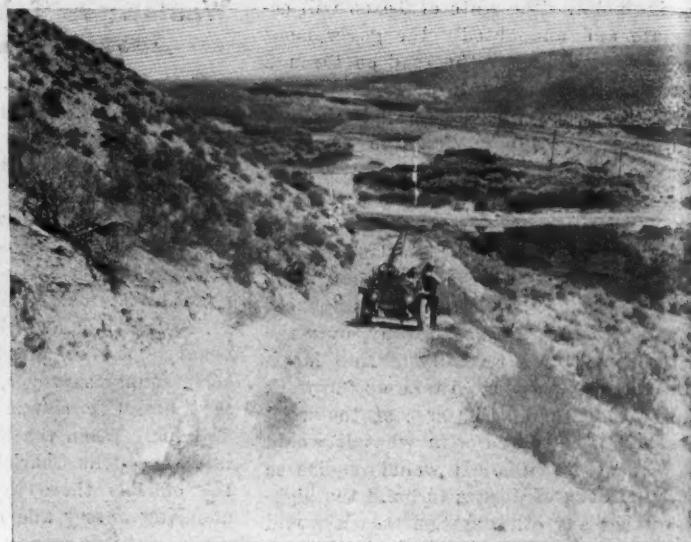
Washington, D. C., Aug. 14—As the result of a good roads rally in Alexandria, Va., Thursday night, the Alexandria-Washington Greater Highway Association was formed for the purpose of securing the construction of a macadam road between the two cities. A tentative plan for the construction of the road, prepared by Charles H. Hoyt, a road engineer from the office of public roads, department of agriculture, was submitted. The meeting was attended by several hundred representative men of the two cities. About twenty-five motor cars took the Washington delegation over to George Washington's home city, and all who made the trip had a practical demonstration of the great need of improving the road connecting the two cities. The proposed improvement in this road will be the first step in the work of securing a boulevard between Washington and Mount Vernon, and eventually it is hoped to have the boulevard extended clear through to Richmond. Sentiment throughout Virginia is in accord.

#### CURBING RECKLESS DRIVING

Boston, Mass., Aug. 14—The Massachusetts highway commission is impressing the fact upon motorists in the Bay state that they must obey the laws. One day this week the commission sent out an announcement that seven licenses had been suspended. The cases of reckless driving are being curbed somewhat by these revocations, because although there are many more cars in use yet the number of accidents is not increasing at what might be called an alarming extent. The figures relative to suspensions make an interesting table when this year is compared with that of a year ago. The state is divided into two sections east and west of Worcester. Last year during the first 7 months there were twelve suspensions and twenty revocations. This year in the same period although the licenses revoked only increase to twenty-six, the suspensions increase to four times that of the previous year. There is a large increase in the number of licenses withheld from drivers in the western part of the state, for although only two were suspended for the period in 1908 and none revoked, this year the figures have jumped to eleven suspended and seven revoked. In the eastern section the suspensions have increased from ten to thirty-seven, while the revocations have decreased from twenty to nineteen.



IN THE SIERRA NEVADAS OVERLOOKING CARSON VALLEY



CLIMBING OUT OF HUMBOLDT RIVER VALLEY

RENO, Nev., Aug. 8.—The usual basis for a first-class argument in the east is either religion or politics, but let me assure you that neither of these can hold a candle to the controversy that can be brought about in your average western town by the simple inquiry at the general store as to the best road to the next town. Not that there is such a diversity of routes to choose between—far from it—but each man who may overhear your modest request feels it his duty to direct you on his pet trail. The net result usually leaves us in doubt as to whether a road actually exists, and it usually doesn't so far as we have been able to discover.

Ogden is the gateway to the great desert; 600 miles to the west lies Reno. Two courses lie open to us—shall we cross this terrible waste by the northern route following the Southern Pacific as nearly as possible, or choose the route by Salt Lake City, Ely and Austin? We consult maps and seek information from everyone of whom there is the least chance of obtaining reliable dope with the result that exactly one-half advise one route, the other half the other. Finally we decide for the route nearest the railway for the reasons: first, water, the most important of all things, may perhaps be obtained along the line, and second, as a landmark it will serve to guide us—we hope.

Saturday afternoon finds us again underway after adding to our already overloaded car a supply of provisions, extra water bags and tires, and as we swing north toward Brigham City along the eastern shore of the Great Salt Lake, we begin to realize what a vast country of scorching desert lies between us and the Sierra Nevada's Corinne. Forty miles out proves to be the night stop and, although Mr. Harriman has removed his railroad from it in the construction of the great Lucin cut-off across the lake, a few families still remain in the dismal ruins of a once flourishing town.

Sunday morning finds us on the road at 5, and we strike northwest into desolate

## The Regal Plugger Ends

country to round the head of the great lake, following over a fair road the old right of way of the Union Pacific. The road leads into rough broken country, precipitous hills bar our way and we find ourselves climbing upward and begin to understand why the railway abandoned such a country. The heat is intense, the country most dreary. To the south the great lake gleams in the brilliant sunshine; north—grim mountains loom insurmountable. Westward the trail strings out into the sage brush and grows rougher each mile. We bump up and down long rough hills, thrashing through sage brush and greasewood wheel high, which whips the axles and underparts of the car uneasily.

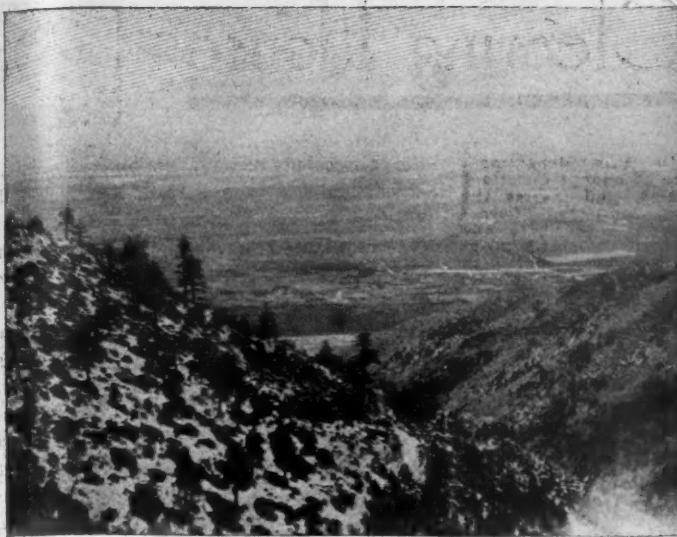
Forty miles of this and Kelton heaves in sight, and a dismal sight it is. Abandoned by the railway, it lies, a handful of houses mostly deserted, bearing an air of general decay that is not stimulating. Nevertheless we find food and water, and are off again over a stiff 4-mile drive for Lucin, our night objective. We cross the great salt marsh at the head of the lake instead of climbing the grade onto the old abandoned rails, and such a crossing. Ten miles wide and as white as snow it lies, seemingly it is as smooth and safe as a cement walk, but the fragile white crust but conceals a swamp of pasty black mud into which should the car sink its recovery is doubtful. We lighten the load as we come on to it, the three passengers walking ahead sounding the crust. As the car progresses, the crust actually bends under its weight, occasionally a wheel all but breaks through and we hold our breath. Twenty miles from help, with a car mired in such a swamp, the thought rather jars us. We hasten on, and as all things must end we finally reach the further foothills and safety. The passengers footsore but happy.

Night comes on and we are still skirting

the northern shore of the great lake. Ten miles an hour is the limit of speed; the wind rises to a tornado and we are in the midst of a choking sand and alkali storm. It cuts our faces and hands and smothers us; still we must go on, and we do, finally arriving at Lucin at 9 p. m., tired and thoroughly powdered with the stinging alkali dust that so irritates the eyes, nose and throat that we all resemble hay fever patients in the acute stage.

### Into Nevada Sand

Lucin is the last town in Utah and we celebrate our entrance into Nevada the next morning by a grueling hand-to-hand struggle with 15 miles of the finest brand of sand we have so far encountered. Every foot of the way to Tacoma along this side of the railway is almost hub-deep and the only possible way that a motor car may progress is by means of canvas strips on which the car must run. Fortunately we have provided ourselves with this most necessary means of locomotion in the shape of strips—each 100 feet long and 2 feet wide—and we spend the entire day getting into Montello, 20 miles, in this manner. The sun is boiling hot, a white ball of fire in a clear sky, the sand reflecting this awful heat bakes our feet as we drag the heavy canvas ahead of the car, make the 100-foot run and then fishing the canvas from the heavy sand in which it is buried a foot by the weight of the car, repeat the operation a hundred times. The people of Montello receive us with open arms. They rustle the music for a dance at the schoolhouse, entertain us with some fancy shooting contests, and make us more than welcome. We leave for Wells the following day with regrets, and again tackle the heartless desert. Don't imagine the Nevada desert a smooth sandy plain—far from it! To the north and south the mountain ranges march in endless procession toward the coast and are joined by steep foothills running across our path, so it's climb up



LOOKING INTO CARSON VALLEY FROM 4,000 FEET ABOVE



ENTERING CANYON BEFORE CLIMBING THE SIERRAS

## Long Run to the Coast

and down all day long, and the grades are wonders for steepness and roughness. We cross the railway at Valley Pass and find a fairly good road and skim along for 10 miles when suddenly discovering that we have lost sight of the railway, which in some mysterious manner has disappeared, we retrace our way to Valley Pass to find that we should have gone south of the tracks, and after an hour's hunt, find the dim trail in the sage brush and are away through the stiff sand hills and into a rough broken country for 40 miles, which after following the abandoned right of way of the old Southern Pacific road, finally, at dark brings us in sight of Wells, supper and much-needed bath and rest.

With the welcome information that the road improves between Wells and Battle Mountain, a distance of 150 miles, we arise at 4 a. m. and beat it, determined to reach this point for the night stop. By 8 o'clock we have reached Deeth, 40 miles, and feel encouraged. We are now along the Humboldt river, green trees appear at intervals in the distance and we occasionally meet ranchers from the southern foothills.

On to Elko we go over a fair road and swinging north 20 miles further on follow the road up through a tremendous canyon turning west across the range, and finally as the sun is setting rise over the last long hill and face green grass, trees and a beautiful white ranch house 10 miles away on the Humboldt river. We slide down the 10-mile slope and arrive at the White House ranch.

### In the Ranch Lands

How good it seems to see the running water in the irrigating ditches and the trees and grass, which we are all sure are the most beautiful in existence after our 400 miles of arid desert. Fifty miles south and 80 east runs the line fence of this ranch, 12,000 head of horses and 15,000 of cattle roam its broad ranges, and

leaving if we ride for 30 miles through its pastures disturbing the cattle, who stampede in a panic at sight of the Plugger.

Battle Mountain is reached at 8 p. m. We are off in the morning for Mill City and find the first 20 miles of road a boulevard, over which we spin in exactly 45 minutes, but then comes our troubles: abruptly we meet the Humboldt river and bottomless sand; we scout ahead, more sand and hills, and profiting by our experience near Tacoma ruthlessly cut the fences of the railway and mounting the grade, bump along the right of way until the road again appears, and deserting the railway we struggle on through sand and dust into Winnemucca at 4 p. m. Mill City, our night stop, is reached at 10 p. m. after another 20-mile battle with sand and dust.

### Slow On Nevada Roads

On Friday morning we decide to reach Lovelock, 50 miles away, for lunch, but fail to reckon with Nevada roads—and such roads. Rutted wagon axle-deep, filled with choking alkali dust and sand we are compelled to take to the rough sage brush alongside; the car is pounded unmercifully, and we wonder how it stands the awful punishment. We are kept busy hanging on and all are thoroughly miserable, sore and by this time suffering with the intense heat and dust, which like a fog rises from the wheels and follows us in a pillar visible for miles. Lovelock at last at 3 p. m. and a promise of better roads across the great Humboldt and Carson sinks gives us renewed energy and we are away at 4 p. m., hoping for night 63 miles away. The road is good and we bowl along for 20 miles, skirting the northern edge of the great sink into which the Humboldt river so mysteriously sinks into the alkali desert. At Toy we cross the railroad north and take the old emigrant trail sixteen ruts wide, all impassable but the last and newest set and come down into the Carson

sink. For 35 miles we can get no water and must hasten across this God-forsaken country to Hot Springs.

### The White Carson Sink

Westward as far as we can see the white salt-incrusted alkali plain stretches to the setting sun. Southward the mountains and the railway at their base recede into the dim hazy distance, and to the north the broken foothills lie barren and desolate.

We spin along, but how seemingly slow the progress, it is as though we remained in the very center of this deserted land and the wheels revolved under us idly. A band of wild horses, thirty in number, led by a magnificent white animal, gallop along on our left  $\frac{1}{4}$  of a mile distant. Curiosity as to this strange animal that has invaded their domain seems to have gotten the better of their fears, and although the "Plugger" is hitting off 25 miles an hour in a steady gait, they easily maintain the pace for miles, finally bearing across our path and disappearing northward.

We have been told of this band in advance at Lovelock and of the efforts that have been made to capture the beautiful white leader.

### Crossing Carson Sink

Our map across the sink gave as our first landmark the Salt Works, and when these hove in sight we felt secure as to our course, but unfortunately our guide in Lovelock neglected to state that these were but one of the two that we must pass, and as per instructions we turned south. Here all too soon, and as darkness drops down, realize that without water and food we are lost in the dreaded sink, which perhaps outside of Death Valley is the most dangerous spot in the west. The dim wagon tracks cross and recross on the white surface. The lamps show no well-defined trail, and we follow first one, then another until satisfied that each is wrong. The car is traveling on a thin crust of sun-

(Continued on Page 36.)



# The Readers' Clearing House



## OLD AND NEW TRANSPORTATION

PLYMOUTH, IND.—Editor Motor Age—  
I am sending Motor Age a photograph which I think is something very rare in this neck-of-the-woods, showing an ox team beside a car. I thought the ox teams were all out of existence but I overtook this on the highway about 14 miles from here, going to market with a load of produce. This is a good representation of the past and present way of traveling.—F. H. Kuhn.

## TOO WEAK VALVE SPRING

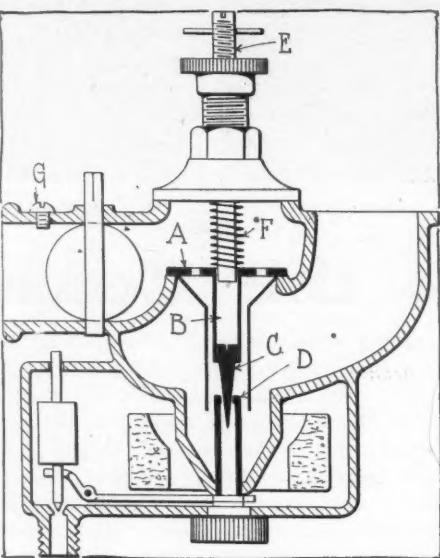
Bar Harbor, Me.—Editor Motor Age—In the issue of August 12 I was interested in question asked by owner of a model E Mitchell as to the cause of misfiring in a back cylinder. In addition to the discussion given, I would like to state an experience of mine which might apply. The cylinder in question would work properly except at low speed under load, when it would miss. The spark was right and the valves and compression seemed right. The reason, however, proved to be that the spring of the exhaust valve was just a trifle too weak. The back pressure of gas from muffler was strong enough when running slowly, under load, to unseat the valve just enough to let in enough dead gas to spoil the mixture and cause the miss.—J. H. Nelson.

A simple method of ascertaining whether a valve spring is too weak is by inserting the pointed end of a screw driver or other tool between the coils of the valve springs so that the spring tension is increased. Should better motor results be immediately shown it would indicate a weak valve spring.

## REMODEL HOLLEY CARBURETER

Congress, Ariz.—Editor Motor Age—I am sending herewith a sketch of a Holley carbureter, 1906 model, as improved by myself. It has given excellent satisfaction and the change is so simple and the results so good that it might be of some use to someone else. I took out the air valve A and ran a tap, 12-by-24 thread, through the tube B and made a needle valve C with a long tapering point to reach down into the gasoline nozzle D, screwed the valve down to the lower end of the tube B and cut off the lower end of the old needle valve E so as to let it project a little into the tube B to act as a guide and hold the spring F in place. I made the needle valve and cut the thread in the lathe so the joint should turn true as it is being adjusted either down or up. I have been using this nearly a year and never have had anything to compare with it. It will run slowly on the high gear without any fear of stalling the motor, and it will pull up hills on the high that I used to have to throw in the low gear before I got half way up. The motor never knocks on a hard pull up hill or through deep sand, as motors will if they

**EDITOR'S NOTE**—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.



REMODELED HOLLEY CARBURETER

do not have plenty of gasoline. It makes 19 to 22 miles per gallon of gasoline on our rough and sandy roads and that is about as good as any of them will do; but the best part of it is that it will pull and never clogs up. One may experience some difficulty in setting it right at first. The needle valve C should be screwed down so that when the air valve A is on its seat there will be opening enough at the nozzle D to give gasoline to run the motor light. I might say that I tapped in a No. 10 screw G between the throttle and the intake pipe for convenience in adjusting, as by running the screw and holding the finger over the hole and admitting more or less air while the motor is running, the speed of the motor will show if it needs more gasoline or more air. The hole also is convenient for injecting decarbonizer in the cylinders while the motor is running to clean off the valves and the spark plugs.—A Subscriber.

## LIKES FAN-BLADED FLYWHEEL

Lafayette, Ind.—Editor Motor Age—Replying to the communication in Motor Age, issue August 5, by C. B. Hatfield, Oshkosh, Wis., will say that Mr. Hatfield seems to cast a reflection on all air-cooled engines now used on high-wheel, solid-tire type of cars. I am a user of such a type of machine. The power is furnished by a four-cycle offset two-cylinder opposed engine of

the air-cooled variety, mechanically lubricated, and having a bore of  $4\frac{1}{2}$  inch with  $3\frac{3}{4}$ -inch stroke. The flywheel is a patented feature with six spokes cast like fan blades and delivers a powerful draft against the cylinder heads and not against the crankcase. This machine has covered 1,000 miles and a little more this season. It never has overheated, never caused a moment's delay, runs as smoothly as at first and has not cost a cent for repairs up-to-date. I might add that with the exception of the flywheel about all the features embodied in air-cooled engines to which Mr. Hatfield takes exception, are eliminated in this motor to which I refer. The intake and exhaust are operated by separate pushrods and individual cams of the proper shape to overcome his exceptions. This machine always has had plenty of power to meet bad road conditions and steep hills.—George H. Hollis.

## THE STOCK CAR FARCE

LaSalle, Ill.—Editor Motor Age—The general public as well as the motoring public is undoubtedly much interested in a bona-fide stock car race, but not in a race permitting such rank evasions of what common sense calls a stock car, as indicated in the recent Crown Point races. The rule permitting a firm to simply have on hand in the factory the necessary parts with which to manufacture seven or eight cars like the two or three entered in a race is an absurdity. When a person enters a store and asks to see a duplicate of the winning car, and is shown what the salesman claims to be an exact replica, the salesman lies. This experience has happened. What does the public care about what will be done next year, according to the claims of the manufacturers. The facts are that the cars were especially fixed up in many cases for this race, and to conform to the rules in one case at least, the company furnished a bond that they would make eight more cars, like the racers, for sale and call them the 1910 model A or A1, or some other special number. It is well known that in the Locomobile the compression was increased. The Buicks used light pistons and made other changes. The Knox used was a 1910 model, chain-drive, with bigger cylinders than the Knox ever used. The standard Knox so far sold as stock is shaft-driven. The Chalmers-Detroits used auxiliary exhaust ports, which are not stock, and we doubt if they ever will be sold as such. A few cars honestly stuck to the stock rule in accord with the spirit of the rule, but these cars did not win and could not be expected to with the handicap of specially-constructed racing cars to contend with. Another feature, which is unfair, is the rule allowing a firm to put in three

cars. Two should be sufficient. In the Cobe race, after Florida deliberately smashed his car to avoid killing someone on the road, one Locomobile was pitted against three Buicks, and the driver, Robertson, already worn out by the Indiana trophy race, was up against Chevrolet, who was fresh. There is no objection to a car being tuned up for a race, if this tuning is confined to adjustments. But the word tuning is stretched to mean rebuilding in many cases. Let's have another race next year, with more cars and a bigger crowd. Get the best drivers available. Let each drive but one day. Put a canopy over the grand stand so the public will use it and not shelter in the sun, and do not scare people away by telling of the difficulty of getting positions to see the race, or meals. But above all, let us have a race of cars that are stock, not of cars with a promise to be stock some time in the very dim and distant future—and only ten of them at that!—John Smyth.

#### MULTI-POCKET AIR TUBE

Chicago—Editor Motor Age—I have read with interest the new invention by Daniel McArthur, Jersey City, N. J., which relates to a new type of inner tube for pneumatic tire, in which the inner tube is arranged in a series of pockets all connected to a charging section by automatic valves, which close simultaneously all around the wheel after the tire is inflated. The value of this tube consists in that should a puncture occur on the air for one pocket escapes and the danger of the tire flattening and causing the machine to run off the road is avoided. I believe this is a step in the right direction and should have the support of every owner of a machine.—An Earnest Reader.

#### USEFULNESS OF COLONEL POPE

Boston, Mass.—Editor Motor Age—It may be interesting to many readers of Motor Age and admirers of the late Colonel A. A. Pope to know that it was in 1876 that there came a turning point in his career, as far as his attitude toward manufacturing was concerned. When he visited the exposition in Philadelphia in that year, he was in the leather business. He saw, among other things at the exposition, bicycles that had been sent there by an English firm and he spent hours in examining them. Later on an Englishman was a guest at his home and told Colonel Pope how popular the machines were in Europe. That was enough. Over to Europe went the colonel on a tour of investigation which resulted in his establishing the bicycle industry in this country at Hartford. He and several others made fortunes out of it. He kept pace with public demands and soon the old high wheel was superseded by the safety. Colonel Pope soon saw that to make bicycles a success good roads were necessary and he began a campaign that became national in scope, during which time he earned the title "father of good roads." He spent time and money freely in this campaign and the motorists of



today owe him a debt of gratitude. He built an experimental piece of macadam road on Columbus avenue, Boston, to educate the people to good highways and in 1892 the movement was well under way. For years he endowed a special department of good roads at the Massachusetts Institute of Technology and induced Harvard authorities to introduce a similar department in the Lawrence Scientific School. He enlisted the support of representative men all over the country, national and state governments came to his standard. The department of agriculture established a bureau of road inquiry and the Massachusetts highway commission was established through his influence.—J. T. Sullivan.

#### PATENT STATUS OF FRICTION

Oshkosh, Wis.—Editor Motor Age—There recently appeared in the columns of Motor Age a few comments on the subject of the patent on friction-drive in motor cars, which to the layman is somewhat misleading. As Motor Age is a recognized authority on matters pertaining to motor car construction and use, I beg leave to make a statement and comment on said friction patent. A patent No. 761,384 was granted May 31, 1904, to John W. Lambert, of Anderson, Ind., on friction gearing. Each claim of said patent—there being six claims, specifically states either: Claim No. 1—"One disk having a bearing part of aluminum"; claim No. 2—"provided with an aluminum bearing plate detachably secured thereto"; claim No. 3—"a face of aluminum"; claim No. 4—"a bearing plate of aluminum for said disk"; claim No. 5—"a frictional surface of aluminum"; claim No. 6—"a surface of aluminum." It is clear that there is no broad patent on friction gearing, unless the disk has an aluminum face.

Now as to the court's decision: A final decree was rendered June 21, 1909, in the United States circuit court, district of Massachusetts, at Boston, by Justice Colt,

sustaining the patent as infringed by the Waltham Mfg. Co. As to its merits: In a communication received by the writer from Charles H. Darling, clerk of said court, "there was no testimony taken, and no hearing before the court in the case of the Buckeye Mfg. Co. vs. the Waltham Mfg. Co. The only pleadings in the case were the bill of complaint and the answer. The case was not argued, but was disposed of by consent of both parties." Will the public kindly note the term "disposed of," and think? I have a patent granted many years ago on a machine for inking the edges of shoes wherein I used a friction device with a surface of aluminum and a leather contact, but knew even then that the court had decided "a patent on the use or substitution of one metal for another was not patentable." I have been making friction-driving devices in motor cars for the last 4 years but have not yet used a friction face of aluminum, not because of any patent, but because I know of a far better frictional driving metal, or alloy. This has been ascertained by a series of experiments. If anyone engaged in motor car manufacturing desires further information I am open for questions.—C. B. Hatfield.

#### MADISON-LACROSSE ROUTE

LaCrosse, Wis.—Editor Motor Age—Many references in the published accounts of the Glidden tour tell of the unspeakable roads from Madison to LaCrosse. There is some injustice to this section in spreading the impression among tourists that LaCrosse cannot be reached except by the abominable roads that were selected for the annual contest. This may have been done purposely, to effect a supreme test for the contesting machines, but the fact should be known that the chosen route is one that is practically never used by tourists, while the ordinary hard clay roads via Baraboo, Kendalls, Ontario and Cashton are used every day by numbers of travelers and are as satisfactory as the usual unimproved country roads.—E. O. Edwards.



THE CAR AND OXEN MEET IN INDIANA

## MISCELLANEOUS LEVERS AND MOTIONS

By Thomas J. Fay

A	$\frac{3}{4}$	$\frac{5}{8}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
B	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$
C	$\frac{452}{482}$	$.495$	$.588$	$.651$	$.770$
D	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{3}{4}$
E	$\frac{13}{32}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{32}$	$\frac{13}{32}$
F	$\frac{7}{32}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{32}$	$\frac{5}{32}$
G	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{1}{2}$
H	$\frac{13}{32}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{32}$	$\frac{13}{32}$
I	$\frac{3}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{1}{2}$
J	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{1}{2}$
K	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{1}{2}$
L	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{1}{2}$
M	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{1}{2}$
N	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{1}{2}$
O	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{1}{2}$
P	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{1}{2}$
Q*	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{1}{2}$
S	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{11}{16}$	$\frac{1}{2}$
*For $\frac{1}{2}$ -in. rod, washer = 1-in. outside diameter.					

\*For  $\frac{1}{2}$ -in. rod, washer = 1-in. outside diameter.

FIG. 18A—ADJUSTABLE YOKE SIZES

In practice there are divers methods of proceeding, and merit resides in each of them, so that it is largely a matter of choice among designers as to which method to use. In view of the extent to which motor car engineers, under the auspices of makers, have sanctioned the use of certain sizes of parts, and on account of the ease with which other methods work out, it will be the aim to limit the discussion here to them, rather with the expectation that the subject may be broadened as the occasion requires.

## A. L. A. M. Standard Bolts and Nuts

It has been found that coarse threads are prone to back off, and locking becomes difficult; it is also true of them that they require excess thickness of walls, and in the bolts and nuts as here offered, these troubles are fairly well eliminated. Fig. 17 is a diagrammatic illustration of a bolt, and the accompanying table, Fig. 17A, gives all the required dimensions, of bolts and nuts of sizes such as will be of any value.

Fig. 18 represents yokes and eye-bolt ends made of steel in suitable grades, and adjustable, and Fig. 18A gives specifications of these. All necessary dimensions, which, together with solid yokes and eye-bolts as shown in Fig. 20, with specifications as per table, Fig. 20A, afford much facility, especially as Woodruff keys may also be had in all sizes, the advantages of which are shown in Fig. 19. In Fig. 21, A and B show the principle of universal joints, in which it is the purpose to show that two such joints must be used, if the shaft rotates, and if there is to be a correction of the variations in angular displacement, which would be the result of the use of one joint only. In order to correct this motion.

A. L. A. M. STANDARD SOLID YOKE AND EYE ROD END					
Material: No. 5 A.L.A.M. Steel					
	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
A	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{8}$
B	$\frac{1}{16}$	$\frac{1}{32}$	$\frac{1}{32}$	$\frac{1}{32}$	$\frac{1}{16}$
C	$\frac{1}{32}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{32}$
D	$\frac{1}{64}$	$\frac{1}{128}$	$\frac{1}{128}$	$\frac{1}{128}$	$\frac{1}{64}$
E	$\frac{1}{128}$	$\frac{1}{256}$	$\frac{1}{256}$	$\frac{1}{256}$	$\frac{1}{128}$
F	$\frac{1}{256}$	$\frac{1}{512}$	$\frac{1}{512}$	$\frac{1}{512}$	$\frac{1}{256}$
G	$\frac{1}{512}$	$\frac{1}{1024}$	$\frac{1}{1024}$	$\frac{1}{1024}$	$\frac{1}{512}$
H	$\frac{1}{1024}$	$\frac{1}{2048}$	$\frac{1}{2048}$	$\frac{1}{2048}$	$\frac{1}{1024}$
I	$\frac{1}{2048}$	$\frac{1}{4096}$	$\frac{1}{4096}$	$\frac{1}{4096}$	$\frac{1}{2048}$
J	$\frac{1}{4096}$	$\frac{1}{8192}$	$\frac{1}{8192}$	$\frac{1}{8192}$	$\frac{1}{4096}$
K	$\frac{1}{8192}$	$\frac{1}{16384}$	$\frac{1}{16384}$	$\frac{1}{16384}$	$\frac{1}{8192}$
L	$\frac{1}{16384}$	$\frac{1}{32768}$	$\frac{1}{32768}$	$\frac{1}{32768}$	$\frac{1}{16384}$
M	$\frac{1}{32768}$	$\frac{1}{65536}$	$\frac{1}{65536}$	$\frac{1}{65536}$	$\frac{1}{32768}$
N	$\frac{1}{65536}$	$\frac{1}{131072}$	$\frac{1}{131072}$	$\frac{1}{131072}$	$\frac{1}{65536}$
O	$\frac{1}{131072}$	$\frac{1}{262144}$	$\frac{1}{262144}$	$\frac{1}{262144}$	$\frac{1}{131072}$
P	$\frac{1}{262144}$	$\frac{1}{524288}$	$\frac{1}{524288}$	$\frac{1}{524288}$	$\frac{1}{262144}$

FIG. 20A—SOLID YOKE SIZES

however, it is necessary to so place the respective joints on the two ends of the shaft so that the wings, jaws, or spiders will be in a common plane. If the members are not in the same plane, instead of correcting the angular difference, in rotation, the variation will be doubled instead.

Fig. 22 represents an electrical joint of the ball-and-socket type enlarged to bring out the important features, and among the advantages claimed for this type of joint are: ease in making and breaking the connection, good and permanent electrical contact, and protection of the insulation.

### Materials in Levers

The dimensions of levers will depend upon many things, such as material, shape, twisting moment and material used. Fig. 23 indicates the sections most in vogue and the material used is that which will forge without undergoing deterioration in the process. Fig. 24 is of an I section with dimensions indicating a certain economy of metal, as arrived at by formula as follows:

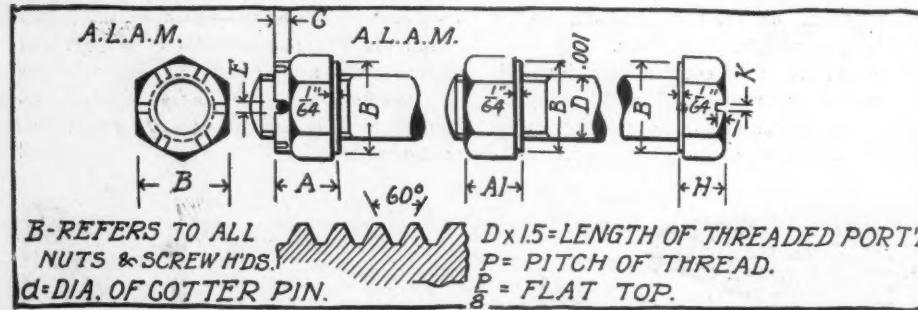


FIG. 17.—DIAGRAM OF BOLT WITH SIZES GIVEN.

$$P = \frac{890 \text{ A.D.}}{L} = \frac{890 \times 25 \times 1}{1} = 222.5 \text{ lbs. pull.}$$

$$L = \frac{890 \text{ A D}}{890 \times 25 \times 1} = 1 \text{ foot length.}$$

$$\begin{array}{ll} P & 222.5 \\ PL & 222.5 \times 1 \end{array}$$

890×D 890×1  
PL 222.5×1

$$D = \frac{890}{890 \times A} = \frac{1}{890 \times 0.25} = 1 \text{ inch depth of section.}$$

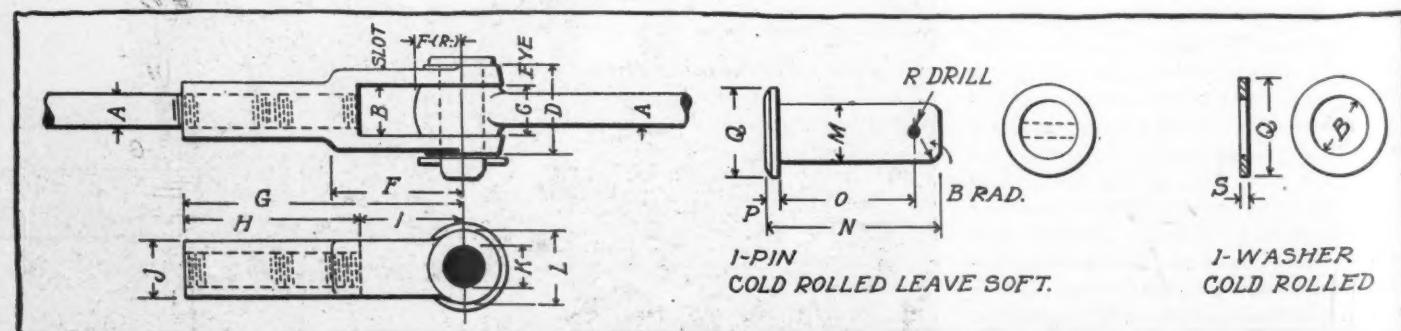


FIG. 18—DIAGRAM OF YOKO AND EYE-BOLT ENDS WITH SIZES

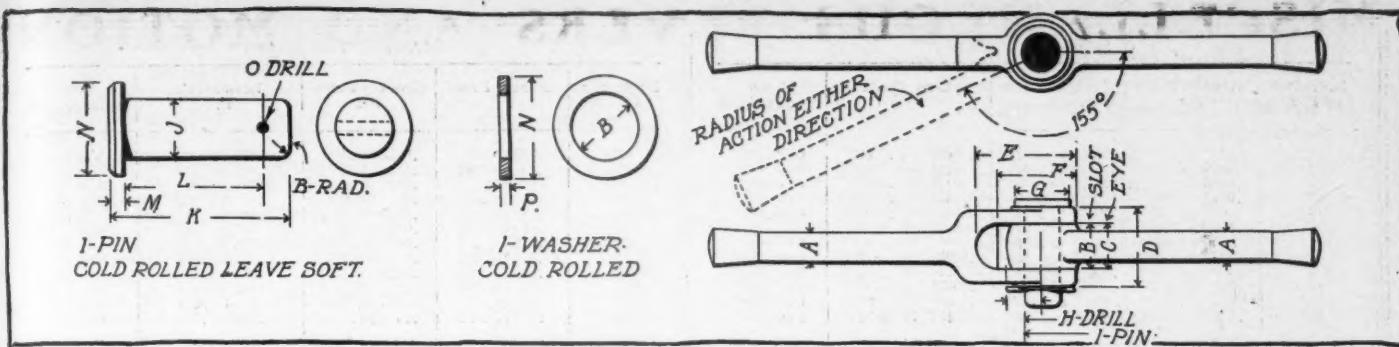


FIG. 20—ILLUSTRATION WITH SIZES OF SOLID EYE-BOLTS AND YOKES

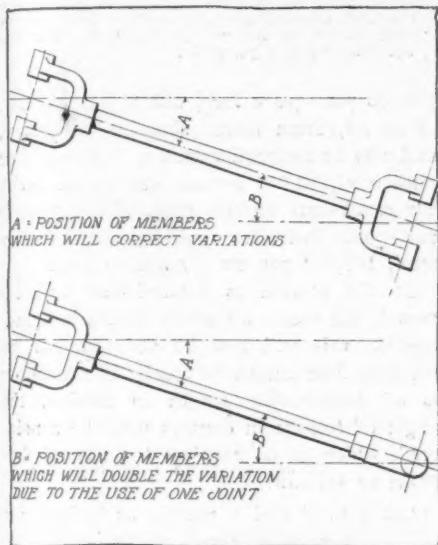


FIG. 21—DOUBLE UNIVERSAL JOINT SCHEME

$$PL \quad 222.5 \times 1 \\ K = \text{constant.} \\ AD \quad 0.25 \times 1$$

The formula as above used will serve for any section, provided a constant be derived to suit the section. The constants as follows will serve for the several sections used under conditions in which the lever is loaded at one end and is twisted at the other.

#### Constants for Use in Designing Levers

Section	Constant
Solid rectangle	470
Solid cylinder	360
Even-legged angle or T	465
Channel or Z	800
I section	890

In the event a hollow cylinder is used, as

when steel tubing is made to serve for levers, the formula as follows will serve the purpose:

$$350 (A D - a d) \\ P = \text{safe load in pounds.} \\ L$$

When  $A$  = sectional area in square inches.  
 $D$  = outside diameter in inches.  
 $d$  = bore of hole in inches.  
 $a$  = area of hole in inches.

In every case as above given the extreme fiber strain will be 16,800 pounds per square inch, which indicates an adequate factor of safety if the material is fairly good, say that due to the use of 20-point carbon, acid open-hearth steel. In every case the length is in feet, and the depth  $D$ , is in inches; width does not have to be specified, since it is represented in ascertaining the area of section  $A$ , in square inches.

#### Torsional Strength of Axial Members

In and about the motor, considering power plants for motor cars, there are a number of spindles and shafts, all of quite small diameter and subject to twisting moments of a variable character, rather than to large and steady torsional moments. In the aggregate these shafts augment total car weight, and it is important to eliminate as much of this weight as possible without entertaining failure.

Water pumps, for illustration, in cold weather, even if the water is emptied out of the system, may hold enough water to induce a film of ice to glue the surfaces, which, when starting the motor, will cause a considerable extra twisting moment to endanger the shaft. This extra torsional effort must be allowed for, which to do requires that

#### DIMENSIONS OF A.L.A.M. BOLTS

D	1/8	5/32	3/16	7/32	15/64	9/32	13/64	17/64	11/32	23/64	27/64	31/64	35/64	1/4
P	28	24	24	24	24	20	20	18	18	16	16	16	16	14
A	1/2	5/16	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32
A <sub>1</sub>	5/16	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32
B	3/8	7/16	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32
C	3/8	7/16	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32
E	3/8	7/16	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32
H	15/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32
I	3/8	7/16	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32	15/32
K	15/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32
d	15/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32	13/32

FIG. 17A—A. L. A. M. BOLT SIZES

the shaft be of greater diameter than the normal work would seem to indicate, and it would not be out of place to consider the torsion on a basis of several times that due to normal work.

In many cases it is possible to use hollow shafting, and the strength for weight is very great. The formulæ, as follows, will tell of the relative advantages of solid and hollow members in torsion:

Let  $d$  = diameter in inches of torsional member.

$l$  = length in inches.

$P$  = pull in pounds.

$a$  = distance of  $P$  from axis of shaft in inches.

$Pa$  = moment of the applied force.

$J$  = polar moment of inertia.

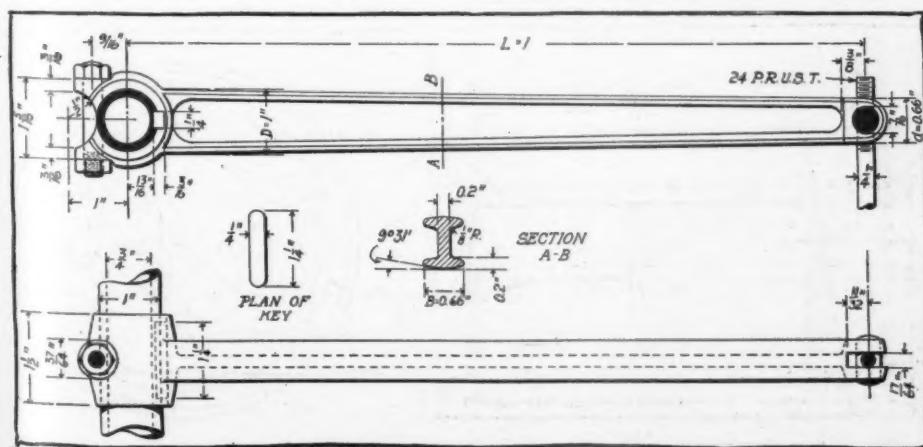


FIG. 24—AN I-SECTION LEVER WITH SIZES SHOWN

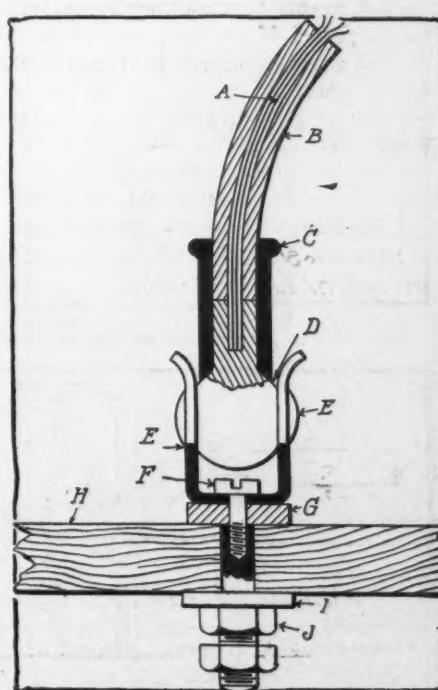


FIG. 22—ELECTRICAL BALL-AND-SOCKET JOINT

DIAMETER OF SHAFT					DIAMETER OF SHAFT				
Diameter of Part	Greater Press Fit	Greater Drive Fit	Less Hand Fit	Less Nominal Fit	Diameter of Part	Greater Press Fit	Greater Drive Fit	Less Hand Fit	Less Nominal Fit
1"	.001" to .002"	.0005" to .0015"	.001" to .002"	0 to .002"	25	.025 to .05	.0125 to .0375	.025 to .05	0 to .05
2"	.002" to .003"	.001" to .002"	.0015" to .0025"	0 to .002"	50	.05 to .075	.025 to .05	.033 to .058	0 to .05
3"	.003" to .004"	.0015" to .0025"	.00175" to .00275"	0 to .002"	75	.075 to .1	.0375 to .0625	.042 to .067	0 to .05
4"	.004" to .005"	.002" to .003"	.002" to .003"	0 to .003"	100	.1 to .125	.05 to .075	.05 to .075	0 to .075
5"	.005" to .006"	.0025" to .0035"	.0025" to .0035"	0 to .003"	125	.125 to .15	.0625 to .0875	.058 to .083	0 to .075
6"	.006" to .007"	.003" to .004"	.00275" to .00375"	0 to .003"	150	.15 to .175	.075 to .1	.067 to .092	0 to .075
7"	.007" to .008"	.0035" to .0045"	.003" to .004"	0 to .004"	175	.175 to .2	.0875 to .1125	.075 to .1	0 to .1
8"	.008" to .009"	.004" to .005"	.00325" to .00425"	0 to .004"	200	.2 to .225	.1 to .125	.081 to .106	0 to .1
9"	.009" to .010"	.0045" to .0055"	.0035" to .0045"	0 to .004"	225	.225 to .25	.1125 to .1375	.087 to .112	0 to .1
10"	.010" to .011"	.005" to .006"	.00375" to .00475"	0 to .005"	250	.25 to .275	.125 to .15	.094 to .119	0 to .125
11"	.011" to .012"	.0055" to .0065"	.004" to .005"	0 to .005"	275	.275 to .3	.1375 to .1625	.1 to .125	0 to .125
12"	.012" to .013"	.006" to .007"	.00425" to .00525"	0 to .005"	300	.3 to .325	.15 to .175	.106 to .131	0 to .125

**TABLE I—ENGLISH**—Serviceable for fits of members with a fixed relation, but not for journals, considering parallel work. In these cases the bore of the holes should be within .0005 inch below the drawing size given, and the shaft or other part should change the amounts of these allowances above or below the diameter for the hole, as the case may be, considering the purpose.

$c$  = distance of the remotest fiber of the shaft from the axis = half the diameter of the shaft.

**S** = unit shearing resistance in pounds per square inch.

The above is for a solid round shaft; if the shaft is hollow, the formulæ as follows will hold:

Let  $P_a$  = twisting moment in inch-pounds; moment of the applied force, as before taken, also equal to the resisting moment.

$S = \text{unit shearing resistance, as before}$

D = outside diameter of the hollow shaft.

$d$  = inside diameter of the hollow shaft.

$$D = \frac{D^4 - d^4}{D} = \frac{(D^2 + d^2)(D^2 - d^2)}{D} = \frac{(D^2 + d^2)(1 - \frac{d^4}{D^4})S}{D}$$

Since shafts are finished square to admit

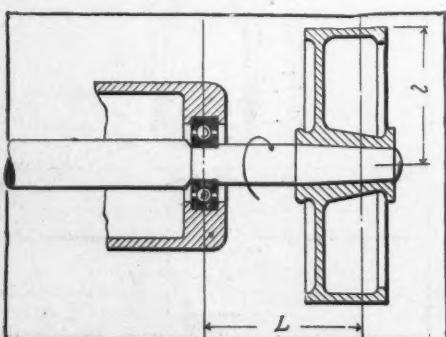


FIG. 25—ILLUSTRATING TORSIONAL MOVEMENTS

DIAMETER OF SHAFT				
Diameter of Part	Greater Press Fit	Greater Drive Fit	Less Hand Fit	Less Nominal Fit
25	.025 to .05	.0125 to .0375	.025 to .05	0 to .05
50	.05 to .075	.025 to .05	.033 to .058	0 to .05
75	.075 to .1	.0375 to .0625	.042 to .067	0 to .05
100	.1 to .125	.05 to .075	.05 to .075	0 to .075
125	.125 to .15	.0625 to .0875	.058 to .083	0 to .075
150	.15 to .175	.075 to .1	.067 to .092	0 to .075
175	.175 to .2	.0875 to .1125	.075 to .1	0 to .1
200	.2 to .225	.1 to .125	.081 to .106	0 to .1
225	.225 to .25	.1125 to .1375	.087 to .112	0 to .1
250	.25 to .275	.125 to .15	.094 to .119	0 to .125
275	.275 to .3	.1375 to .1625	.1 to .125	0 to .125
300	.3 to .325	.15 to .175	.106 to .131	0 to .125

**TABLE II—METRIC**—Serviceable for fits of members with a fixed relation, but not for journals, considering parallel work. In these cases the bore of the holes should be within .0125 inch below the drawing size given, and the shaft or other part should change the amounts of these allowances above or below the diameter for the hole, as the case may be, considering the purpose.



of the use of universal joints and for sliding members such as gears, it is necessary to fix ability of square members in torsion, as follows:

Let  $d$  = side of a square in inches.  
 J, c, S, P and a, as before.

$$\text{When } J = \frac{6}{d^4}$$

$$e = d \times 0.5 \frac{1}{2}$$

$$P_a = \frac{S J}{c} = \frac{d^3 S}{4.2426} = 0.236 d^3 S$$

In joints and other places rectangular shapes are sometimes employed, and they may be calculated as follows:

Let  $b$  = breadth of section in inches.

**d = depth of section in inches**

$$\text{Pa, S, J and c as before.}$$

$$\text{S J} \quad (b d^3 + b^3 d) S$$

When  $\text{Pa} = \frac{c}{e} = \frac{6 \sqrt{b^2 + d^2}}{b^2 + d^2}$

$$c = \frac{1}{2} \sqrt{b^2 + d^2}$$

$$b d^3 \quad b^3 d$$

$$J = \frac{12}{12} + \frac{12}{12}$$

The unit torsional shearing resistances, in

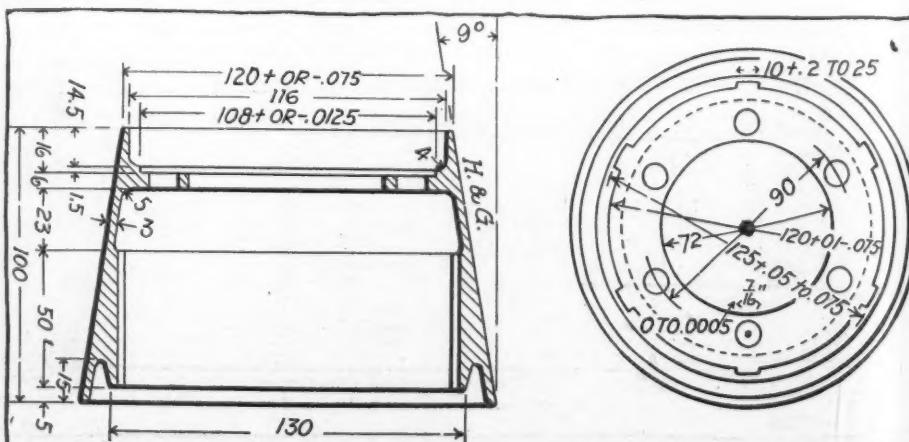


FIG. 26—ILLUSTRATING DIMENSIONS NEEDED FOR WORKMEN

## BORE OF HOLE GREATER THAN DIAMETER OF SHAFT

Diameter of Part	Close Fit	Free Fit	Loose Fit	Nominal Fit
1"	.003" to .005"	.008" to .011"	.023" to .028"	0 to .002"
2"	.004" to .006"	.009" to .012"	.026" to .031"	0 to .00225"
3"	.005" to .007"	.010" to .013"	.029" to .034"	0 to .0025"
4"	.006" to .008"	.011" to .014"	.032" to .037"	0 to .00275"
5"	.007" to .009"	.012" to .015"	.035" to .040"	0 to .003"
6"	.008" to .010"	.013" to .016"	.038" to .043"	0 to .0035"
7"	.009" to .011"	.014" to .017"	.041" to .045"	0 to .004"
8"	.010" to .012"	.015" to .018"	.044" to .049"	0 to .0045"
9"	.011" to .013"	.016" to .019"	.047" to .052"	0 to .005"
10"	.012" to .014"	.017" to .020"	.050" to .055"	0 to .0055"
11"	.013" to .015"	.018" to .021"	.053" to .058"	0 to .006"
12"	.014" to .016"	.019" to .022"	.056" to .061"	0 to .0065"

## BORE OF HOLE GREATER THAN DIAMETER OF SHAFT

Diameter of Part	Close Fit	Free Fit	Loose Fit	Nominal Fit
25	.075 to .125	.2 to .275	.575 to .7	0 to .050
50	.1 to .15	.225 to .3	.65 to .775	0 to .056
75	.125 to .175	.250 to .325	.725 to .15	0 to .063
100	.150 to .2	.275 to .350	.8 to .925	0 to .069
125	.175 to .225	.3 to .375	.875 to 1.00	0 to .075
150	.2 to .25	.325 to .4	.95 to 1.075	0 to .087
175	.225 to .275	.350 to .425	1.025 to 1.15	0 to .1
200	.250 to .3	.375 to .450	1.1 to 1.225	0 to .113
225	.275 to .325	.4 to .475	1.175 to 1.3	0 to .125
250	.3 to .35	.425 to .5	1.25 to 1.375	0 to .138
275	.325 to .375	.45 to .525	1.325 to 1.45	0 to .15
300	.35 to .4	.475 to .550	1.4 to 1.525	0 to .163

TABLE III—ENGLISH—Serviceable for bearings and similar work. In all cases while figures given are for bore of hole greater than diameter of shaft, the bores should be within .0005 inch of standard dimension given, and the shaft or part to fit the hole should have the allowance here given, below the standard dimension given on drawing.

Considering  $\alpha$  angle of torsion in degrees:

$$\theta = \frac{a \pi}{180} \frac{190 \times 32 \text{ P a 1}}{\pi \text{ d}^4 \text{ G}} = \frac{583.6 \text{ P a 1}}{\text{d}^4 \text{ G}}$$

Assigned values of G, in practice, are:  $\frac{1}{3}$  to  $\frac{1}{2}$  of E.

E = modulus of elasticity = 29,000,000 for mild steel; a safe value for G would be 10,000,000.

When bending moments are introduced in addition to torsional moments they must be taken into account; the formulae as follows will suffice for the purpose. Referring to Fig. 25:

1 = lever-arm length in inches, at the extremity of which the torsional pull P is exerted.

L = the distance in inches from the support to the point of application of the bending pressure in pounds.

The torsional moment then will be  $P_1$ .

The bending moment will be  $PL'$ .

When  $P$  = torsional effort in pounds

$P'$  = bending effort in pounds.

For torsional moment only, on a basis of 12,500 pounds per square inch shearing strain:

$$d = \frac{(P)}{(12,500)}^{\frac{1}{3}} = \text{diameter of shaft.}$$

The equivalent twisting moment, if bending is introduced, will be as follows:

$$t = L P' + \sqrt{(L P')^2 + (1 P)^2} = \text{equivalent twisting moment.}$$

On a basis of 10,000 pounds per square inch, the diameter of the shaft, to resist bending and twisting, as shown for the formula for equivalent twisting moment, will be:

$$d' = \frac{(\text{equivalent twisting moment})^{\frac{1}{3}}}{(10,000)} = \text{diameter in inches.}$$

Any value of S may be substituted for the stress per square inch, 10,000, as above allowed.

#### Limits of Tolerance May Be Tabulated

Instead of guessing at allowances, thus risking gross error, tables may be used, and the object in fixing the allowances is three-fold, namely, in order to economize the time of draftsmen; to take advantage of the skill of one man, who may add limits of tolerance to neat dimensions given on drawings, by draftsmen, and machinists, when they read the drawings, if they find that fit allowances are made, will then be in a position to go by the drawings, which would not be possible were neat dimensions only given.

The tables are in duplicate, expressed in English and the metric system, it now being



the practice in many motor car shops to work to metric measurements. In practice, when allowances are made as here suggested draftsmen work to scale and give neat dimensions; when the drawings are so made, they are handed to a man who puts the allowances down, expressing them as plus or minus the dimensions given by draftsmen in the manner indicated in Fig. 26, A and B. This figure shows a clutch drum, with an end view at A and in section at B. As will be observed the dimensions required by the machinist are given in neat values, and the limits of tolerance are appended. Dimensions which do not have to be very exact are not altered by adding limits of tolerance, as, for illustration, the length of the drum is 100 millimeters; it would not matter were this dimension 1 millimeter out. According to the plan of using the tables, the machinist would consult table VII for English, and VIII for metric dimensions, of all distances which are not modified by specific limits of tolerance.

In B, of the figure, the small outside diameter of the drum is given as  $120 + 0.075$ ; this indicates that the same dimension should be 120 millimeters, subject to a variation of .075 millimeters; that is to say, it may be less than 120 millimeters by .075, or it may be more than the same diameter by an equal variation. Likewise other important dimensions are modified, and in this way the machinist is afforded an adequate error, within which the work must measure up.

## DIA. OF HOLE TO BE LESS THAN SHAFT BY

Dia. of Part	Press Fit	Drive Fit	Hand Fit
1"	.005" to .006"	.0005" to .0015"	.0000" to .001"
2"	.006" to .007"	.001" to .002"	"
3"	.007" to .008"	.0015" to .0025"	"
4"	.008" to .009"	.002" to .003"	"
5"	.009" to .010"	.0025" to .0035"	"
6"	.010" to .011"	.003" to .004"	"
7"	.011" to .012"	.0035" to .0045"	"
8"	.012" to .013"	.004" to .005"	"
9"	.013" to .014"	.0045" to .0055"	"
10"	.014" to .015"	.005" to .006"	"
11"	.015" to .016"	.0055" to .0065"	"
12"	.016" to .017"	.006" to .007"	"

## DIA. OF HOLE TO BE LESS THAN SHAFT BY

Dia. of Part	Press Fit	Drive Fit	Hand Fit
25	.125 to .150	.0125 to .025	.0025 to .025
50	.150 to .175	.025 to .05	"
75	.175 to .2	.037 to .063	"
100	.2 to .225	.05 to .075	"
125	.225 to .250	.063 to .087	"
150	.250 to .275	.075 to .1	"
175	.275 to .3	.087 to .113	"
200	.3 to .325	.1 to .125	"
225	.325 to .350	.113 to .137	"
250	.350 to .375	.125 to .15	"
275	.375 to .4	.137 to .163	"
300	.400 to .425	.15 to .175	"

TABLE V—ENGLISH—For 3-16 in. to 1 foot taper fits of parts. In every case make the male member within .0005 inch above the standard size given.

For  $\frac{3}{4}$  in. to 1 foot, divide above values by 2.

For  $\frac{3}{4}$  in. to 1 foot, divide above values by 4.

For  $1\frac{1}{2}$  in. to 1 foot, divide above values by 8.

TABLE VI—METRIC—For 1 to 64 taper fits of parts. In every case make the male member within .0125 inch above the standard size given.

For 0 to 32 taper, divide above values by 2.

For 1 to 16 taper, divide above values by 4.

For 1 to 8 taper, divide above values by 8.

## TABLE VII—ENGLISH

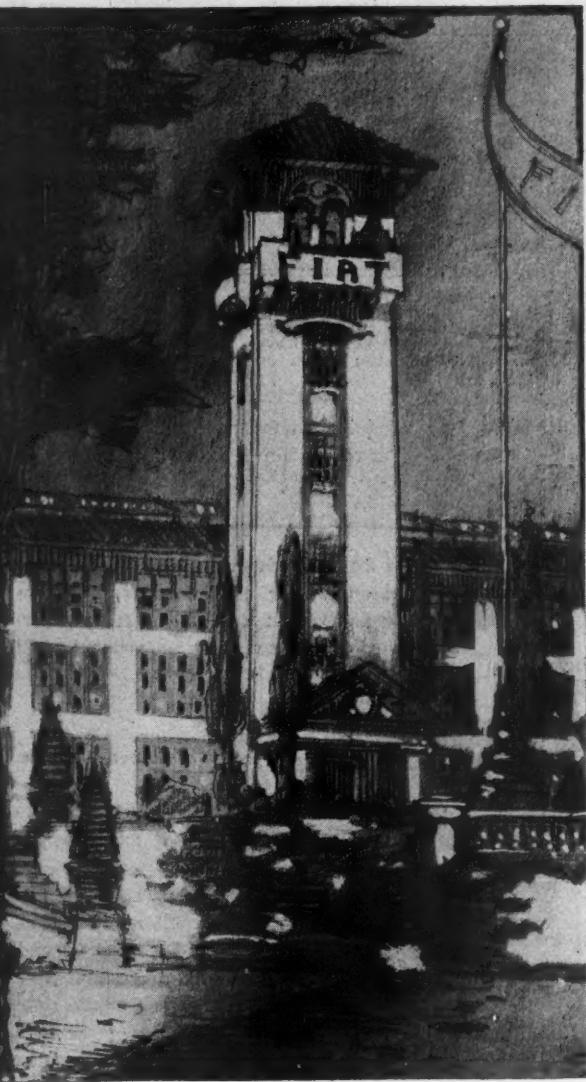
Allowances to go by in all cases if specific limits are not given on drawings. In these tables the approximate dimensions of the parts and the positive or negative limits of tolerance are given in English units and also in the metric scale.

## TABLE VIII—METRIC

## FIAT TO BUILD AMERICAN CAR FACTORY

**P**OUGHKEEPSIE, N. Y., Aug. 16—The new plant of the Fiat Automobile Co., which is about to be erected at Fairview, just outside of this city, is to be a unique series of buildings. Not only will the Fiat car made in this country be identical with the one manufactured at Turin, but the layout of the factory will be as near that used at Turin as American conditions will permit. One of the distinguishing features of the new plant will be the tower, 105 feet high, which will contain all the offices and draughting forces of the plant. The use of the tower for this purpose is practical, because no space is wasted thereby, the upper portion being used as space reserved for pressure tanks, which must necessarily be a considerable height above the roof of the buildings. The tower will be centrally located on the main building, which is to be used on the first floor as a machine shop and assembling hall; on the second floor for machines of a lighter character and on the third floor for wood-working purposes. The first floor of the main building will be 363 feet long and 140 feet wide, supported by columns placed 22 feet in either direction. The ceilings are high, and the side walls consist principally of immense windows to give ample light and ventilation to all parts of the factory.

From the main floor extend a series of five wings at right angles to it, which will consist of one-story buildings, 70 by 140, lighted by large windows on the sides and skylights on the roof. It will be possible for the general superintendent of the factory to observe the entire working space



OFFICE TOWER IN FIAT'S AMERICAN FACTORY

of the main floor from any point in it, thereby increasing the efficiency of supervision, a thing so desirable in a well-regulated institution. The future extension of the factory has also been taken under advisement by Mr. Schoen in laying out the present portion, and he has designed wings and extensions in conformity with the type of architecture used, which will add

to the appearance of the factory as these different portions are added. In this instance again a departure has been made from the established custom, in that the architect has provided for the artistic extension of the building.

Full attention has been given to all the practical requirements of the best factory construction, state laws having been met with regard to sanitation and ventilation. An elaborate sprinkler and standpipe system has been introduced to make the fire risk a minimum. Electricity will be the motive power. The exterior of the building will be treated in light stucco. The roofs will be of red terra cotta tile. The factory is to cover an area of about 11,000 square feet when the buildings at present contemplated are finished.

It is not yet decided whether steel and brick or reinforced concrete are to be the materials used in the construction of this new Fiat plant; but the Italian style of architecture will be employed, and the general layout will be along the lines of the best practice in factory construction used abroad, combined with all the practical suggestions which American factories have to offer. It is generally to be noted that factories are con-

structed for immediate requirements and when any extensions are necessary no provision has been made in the original scheme for them, and there results a conglomerate mass of buildings.

### CAMERON FILES A CLAIM

Beverly, Mass.—Editor Motor Age—In Motor Age of July 10 there appeared an article and illustration telling of an air-cooled car used by the Warren and Jamestown Railway Street Car Co., running back and forth across the border line of New York and Pennsylvania and which had been equipped for use on the rails by fitting flanged wheels. It was stated the car was a Franklin, whereas we have discovered upon investigation that it is a 1904 two-cylinder Cameron, equipped with cone clutch, two-speed sliding gear transmission, shaft-drive through a single universal joint, etc. This car is called into service whenever there is an emergency anywhere along the route requiring quick action in the way of repairs or attending to an accident. Although 5 years old, this car is giving excellent service.—Cameron Car Co.



PERSPECTIVE VIEW OF PROPOSED FIAT FACTORY AT FAIRVIEW

# MANUFACTURERS' TRADE COMMUNICATIONS

## PIERCE-ARROW IN PARIS

THE Paris branch of the Pierce-Arrow Motor Car Co. is located at 22 Avenue de la Grande Armee and has been occupied only recently by the company, the change being made necessary by the greatly increased number of Pierce-Arrow owners who tour abroad and make their headquarters there. Originally the quarters were established for the purpose of providing parts for the Pierce-Arrow cars used abroad in order that the owners might not be forced, in case of replacements, to wait for a shipment from the factory. The establishment of the depot soon caused many owners who previously had rented cars in Europe to take their own machines with them, the realization that they could secure spare parts as quickly as if they were using a foreign car, acting as an incentive to them even when the likelihood of that need was remote. Since the early days the scope of the depot has grown until now it acts almost primarily as a bureau of information for Pierce-Arrow owners and as an agent in the many formalities of entering cars, becoming a member of touring clubs, securing licenses and the obtaining of proper and detailed information regarding routes, etc.

## HISTORY OF PNEUMATIC TIRE

Milltown, N. J.—Editor Motor Age—The first pneumatic tire patent was registered in England in 1845 by R. W. Thomson. The salient features of this pioneer's aerial wheels were covered in the specifications in this quaint phraseology: "The nature of my said invention consists in the application of elastic bearings around the wheels of carriages for the purpose of lessening the power required to draw the carriage, rendering their motion easier and diminishing the noise they make when in motion. I prefer employing for the purpose a hollow belt composed of some air, and water-tight material, such as caoutchouc or gutta percha, and inflating it with air, whereby the wheels will in every part of their revolution present a cushion of air to the ground, or rail, or track on which they run."

After many experiments with Thomson's aerial wheels on all sorts of horse-drawn vehicles covering a period of several years, the invention fell into complete oblivion, and it was not until bicycles became an accomplished fact that the pneumatic tire was re-invented, if that word is permissible, by Dunlop in 1888. Their application to the bicycle was not a complete suc-



CAMERON CAR CONVERTED IN STREET CAR ROLE

cess, however, as their usefulness ended with the first puncture, so it may be said that the first satisfactory pneumatic was that introduced by Michelin in France a few years later. The Michelin tire was detachable, the first of that type, could be repaired easily on the road by the rider, and naturally enough soon became the subject of much imitation. As late as 1894 the late M. Levassor, one of the world's first and most enthusiastic motor car builders, voiced the sentiment of other car makers, when he made his now historic remark, "You might fill a tire with hay or straw and get through a motor car race successfully, but with air,—never!"

It was only after a most severe practical

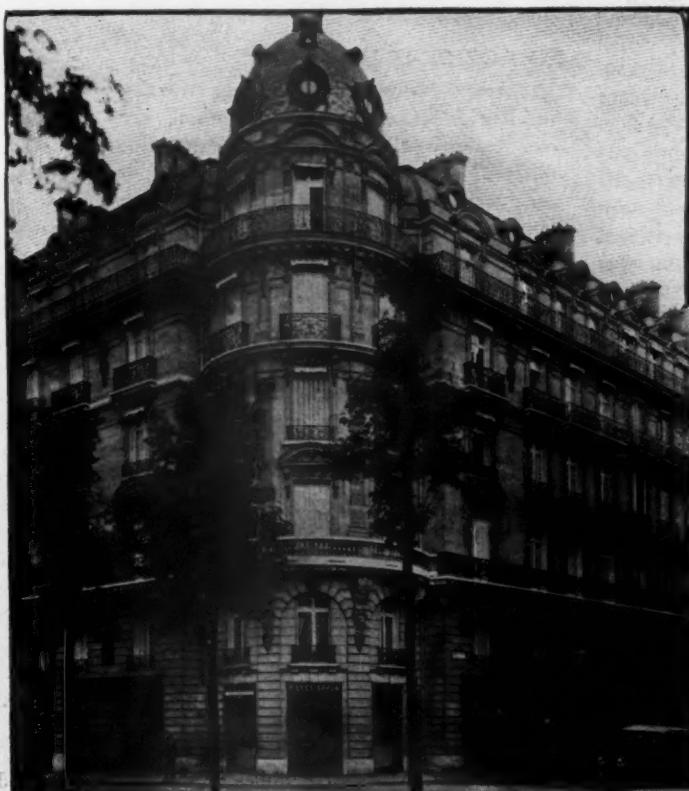
road demonstration at the expense of the tire manufacturer himself, that pneumatics secured their first firm foothold. This was in the historic Paris-Bordeaux speed and endurance contest of 1895, in which the Michelin entered a car that they built themselves at their own rubber factory at Clermont-Ferrand, France, in order to prove to the world that pneumatic tires were practical, no car manufacturer being willing to risk his car on anything but solid tires. This great and now historic demonstration of the success of pneumatics astonished the world, and only a year later such progress had been made that Count de Dion expressed the firm opinion of all when he said, "We make the cars, but

Michelin makes the rails."—The tire story has been an interesting one from start to finish and will remain so as long as improvements are made.—Michelin Tire Co.

## SPRING SITUATION

St. Louis, Mo.—Editor Motor Age—This is to notify you that we have filed suit in the United States circuit court at New York city against M. H. Cormack & Co., Inc., and M. H. Cormack, personally, of Motor Mart building, 1876 Broadway, New York city, for infringement of our patents, No. 807,612, dated December 19, 1905, and No. 901,578, dated October 20, 1908.

The devices of this kind that have been put out by these defendants have not been licensed by us under these patents and the law is that not only these defendants, but also dealers in and users of, such devices, not sold or licensed by us, are liable to us for damages.—Supplementary Spiral Spring Co.



PARIS BRANCH OF PIERCE-ARROW MOTOR CAR CO.



# Legal Lights and Side Lights



## WANT STANDING-BY LAW

A NUMBER of members of the Wisconsin legislature are sounding sentiment among owners as to the passage of a bill at the next session providing for a penalty for failure to render assistance to persons hurt by motor cars. The proposed bill is to be known as the standing-by law and is similar in effect to the federal law requiring masters of vessels to stand by in cases of accident or collision. The suggestion is made that a clause be inserted in the bill making the failure to remain and render assistance *prima facie* evidence that the driver was at fault for the accident and ground for action for damages.

## BLOW AT BELGIAN SPORT

Motorists as well as other sportsmen are going to unite and petition the Belgian government not to accept the law recently voted by the provincial authorities of Braband. This law, which was passed by an overwhelming majority, provides that the promoters of a race meet, either for horses, bicycles or motor cars, must pay to the province a special fee or tax of \$50 per day of races, besides imposing a tax of \$2 for each horse, car or bicycle which is entered for the race or races and a fee or tax of \$4 to be paid by the winner of each race. If that law stands it will mean hardly any more car or bicycle contests in the province in which Brussels is located.

## CONNECTICUT BILL SIGNED

It is a long lane in motoring which has no turn, and extraordinary indeed would be the Connecticut legislature which in the course of a long drawn out session as marks the season of 1909, that would not evolve a new motor car law. The lawmakers endeavored to do their part and now the governor has done his, that is, he has signed the bill which passed both branches of the general assembly. It will be recalled that much opposition was raised against the bill particularly by the Connecticut Automobile Association, the state organization. Many prominent motorists called on the governor in person and requested his veto of the measure. He has signed the bill with the tacit understanding that three amendments should be added to it. Under this new law manufacturers are taxed \$2 for each engine built, a report being necessary of such operation. Twenty-five miles per hour for  $\frac{1}{2}$ -mile still constitutes *prima facie* evidence of recklessness. Money paid in fines will go to the secretary of state and will be placed at the disposal of the state highway commissioner so, in a measure, the law-breakers will help to better the roads of the state. As to registration, every motor cycle will cost \$1; commercial vehicles and power trucks, regardless of

power, \$5; for cars operated by liverymen, \$10 each; for vehicles of less than 20-horsepower, \$6; between 20 and 30-horsepower, \$10; between 30 and 35-horsepower, \$15; between 35 and 40 horsepower, \$20; for 40-horsepower and above, \$30; for the substitution of the registration of a motor vehicle previously registered in accordance with the provisions of section 2 of this act, \$2; for each motor vehicle engine owned by or under the control of a manufacturer of motor vehicles and tested and operated on the highways of the state, \$2 for each such engine. Every manufacturer shall on or before December 31 in each year make a written report under oath to the secretary of the number of engines so tested or operated during the year preceding; for all vehicles owned or under the control of a dealer in motor vehicles, \$20; for every operator's license to operate, \$2; for every additional copy of registration of certificate, 50 cents; for every additional set of number plates, \$1. Revocation of licenses is left to the discretion of the secretary of state. Three amendments have been offered to the bill. One provides for registration of cars computed at 60 cents per horsepower, another gives the secretary of state power to summon witnesses and take testimony in alleged violations of the law and the third provides that cars must come to a stop when approaching trolley cars discharging passengers on the same side of the street. These passed the house and were sent along to the senate.

## NO ACCIDENT INSURANCE

Insurance companies of Iowa cannot write liability insurance protecting motor car owners from suits resulting from injuries inflicted by their machines, according to the decision given by State Auditor Bleakley, who holds that the practice would be contrary to public policy in that it encourages careless driving. As a result of this decision insurance companies will be compelled to limit the issuing of their policies to motor cars used for transporting merchandise, such as trucks and delivery wagons. Subdivision 5, section 1706, of the code permits liability companies to write employers' liability insurance, and it was under this subdivision that some ten or a dozen insurance companies thought they could write insurance covering damages resulting from accidents inflicted by motor cars. Upon the passage of the new law a few months ago practically every insurance company in Iowa prepared for a land office business, believing that that was a large field open for them in writing liability insurance among car owners. Not a few policies were written under this impression, and these will

be allowed to stand until their expiration. Since the passage of the law, it is alleged, acts of carelessness by chauffeurs have been frequent, resulting in an investigation being made by the auditor of the state, who declares that further issuance of these policies will result in the companies forfeiting their licenses.

## TURNING POSTS A NUISANCE

Street turning posts to regulate traffic are termed a nuisance under the laws of city and state by City Attorney Kelly of Milwaukee, Wis., in response to a request for an opinion by the common council, which is considering an ordinance providing for illuminated turning posts at principal street intersections. Mr. Kelly says that there is no legal necessity for turning posts, and if they were placed by an individual, the action would constitute a nuisance. The municipality therefore has no more right to create a nuisance than the individual.

## OF INTEREST TO RENTERS

An important decision was handed down by the tribunal de commerce of Paris which is of much interest for person engaged in the motor car renting or taxicab business. A Mr. B, desiring to go to a castle located quite a ways from Paris, for the purpose of looking at various art works which he intended to purchase if the price suited, went to a concern and rented a car. With him was the representative of the owner of the art objects and an expert whom B was taking with him to have the goods appraised. It was agreed with the concern X that the trip to the castle and return was to be all on the said day, February 1. Less than 50 miles from the starting place the car had been brought to a stop twice owing to tire trouble. Soon after the second stop the driver stated that at the very next town or village he would have to lay up, the car being in no shape to go further. It was found that the only accessory which was carried with the car was a Stepney spare wheel which did not have its needed accessories. There was not even an extra casing or inner tube. At the stopping place where the car was thus laid up, Mr. B hired another car, but this was a much slower vehicle, and when the party finally reached the castle it was night and the goods could not be well examined. B and the expert returned to Paris and B at once brought suit against the concern which had rented him the motor car, claiming that it had not fulfilled its part of the agreement, namely, to take him and the party to their destination and back within the day. He claimed damages for this lost time, for the possible loss of the profit he might have made if he had made a deal and for the fee he had to pay to the expert. The court decided entirely

in his favor. It stated, among other things, that when a concern or a man rents a car it is supposed to be rented not only in good condition, but provided with supplies of first requirements; that is, extra tires, tubes, etc. That by agreeing to bring B to his destination and back within the day and having been informed of the object of the trip, the company had damaged B and should be held to pay for its negligence. The court decided that \$160 would not be too much and thus ordered the motor car renting company to pay that sum to B.

Because a man who had hired a taxicab in Paris refused to pay 69 cents, which was the amount claimed by the taxi driver, and only paid 60 cents, which he stated was even too much, the motor car driver had the other man arrested. The taxicab company started suit to collect the difference of 9 cents. When the case came before the court the man who had hired the taxicab stated that he told the driver to go to a certain place and that the latter instead of going there by the shortest route took a roundabout way and therefore he, the arrested man, had refused to pay the 9 cents. The court decided against the taxicab company, remarking that the driver of a taxicab or any other hired car must always make his trips by the shortest route unless it is materially impossible. "Drivers often disregard the law of fairness," added the court, "and profiting by the fact that the client may not be acquainted with the layout of Paris, take them in a roundabout way to their destination. This is practice which may not be tolerated and for which the taxi company certainly should not stand."

#### CAREFUL CAR OPERATION

In a very recent Rhode Island case, the question of violation of a statute on the control of motor cars was construed. The statute provided that no person should operate a motor vehicle on the public highways recklessly, or so as to endanger the life or limb of any person. One section prescribes precautions to be taken by the operators while using a public highway. A count in a complaint thereunder charged as to the offense that defendant did unlawfully operate a certain motor vehicle in a certain public highway recklessly, and in operating it recklessly ran and drove into a team being driven by complainant on such highway, so as to endanger his life and limb. The court held that disregard of or inattention to the duty prescribed by the law constituted unlawfulness and recklessness; that the words unlawfully and recklessly in the complaint described the manner in which defendant drove, so as to negative an inference that the collision was an innocent accident; and that the facts stated constituted an offense under the statute. This same case allows the person struck by the motor car to testify how fast the machine was going just prior to the accident and also to state the speed of the car just after the acci-

dent. The court held this evidence admissible as being incidental to the collision.

The court held that since a chauffeur, after having caused an accident, is not required to give the information required unless demanded, to comply with the statute, a complaint charging that defendant, after having caused an accident, failed to bring his motor vehicle to a full stop, or return, but drove away at great speed, was not objectionable for failure to charge that he did not give the information with reference to his driver's license and registration number.

#### CHAUFFEUR, NOT OWNER, LIABLE

The decision of the court in the case of People vs. Scanlon, 117 N. Y. Sup. 57, will be received with interest and approval by automobile owners throughout the country, as it lays down the rule on a question which has heretofore been surrounded with obscurity. In a word, the ruling is, that an owner of a motor car, riding therein at a time when the motor car is being operated by his chauffeur, is not criminally liable for the negligent acts of the chauffeur when the owner had no way of preventing the acts at the time they occurred, and when from the chauffeur's previous conduct the owner had reason to believe him to be a prudent, careful operator.

The tendency has appeared, in some cases, to lay responsibility upon the owner of the car for his chauffeur's misdeeds when justice and the correct interpretation of the law would clearly seem to prevent such a course, and this decision, taking as it does the proper view of the facts and the law to be applied to them, will be of distinct importance as laying down a new and correct rule on the subject of automobiles and their control.

The attempt of counsel in the present case was to make the owner of the car legally responsible in a criminal case for the negligent acts of his chauffeur which resulted in the death of an innocent person, in spite of the fact that the owner had every reason to believe his driver was a careful one as judged by his previous conduct, and in spite of the fact that the owner could at the time of the accident control neither the driver nor the car itself. Such a rule if ever established would practically result in the motor car owner becoming the insurer of the chauffeur, and would compel the owner to suffer for any and all acts performed by the chauffeur irrespective of whether it was possible for the owner to have anticipated or foreseen such conduct, or otherwise.

The court in laying down the doctrine, which is manifestly the only fair one to be applied in these cases, says:

"But the rights of the defendant Albro rest upon a different basis. Whatever condemnation we may feel to give to his act

in not stopping the car and rendering aid to the unfortunate victims, we cannot hold his conviction for a crime without evidence. He was not running the machine. He could not turn it the few feet that were necessary to avoid this accident. Scanlon testifies that his instructions were to give full leeway to any passing vehicle. Albro had the right to assume that, with the street sufficiently broad to make an easy passage, the chauffeur would exercise the proper judgment and turn out his machine sufficiently to avoid the collision. In the few seconds of time which elapsed after he might have seen that a collision was to occur, he could not give directions which would avoid the collision. The whole thing was, as it were, instantaneous, in the control of the chauffeur, but in no way in the control of the owner of the car. He had not the wheel in hand. It is true that the chauffeur was under the control of the owner, but that means the general control. He might give general directions. It would be impossible, however, to give specific directions as to the manner of driving upon each separate piece of road over which they were passing. If it were the chauffeur's habit to run so close to other cars as to cause danger, and Albro knew of it, without correcting it, he might be held liable for this negligence; but there is not one word of evidence to the effect that this was the habit of the chauffeur, and Albro's conviction must rest upon his failure within a second of time to give directions, which could not even be comprehended and acted upon, if given, in time to have avoided the accident. It is not contended that for the purposes of a criminal prosecution the negligence of Scanlon could be attributed to the defendant Albro."

#### ITALIAN MOTOR TAX

The Italian parliamentary finance committee has recently concluded its report concerning the new taxes that it is proposed to impose in Italy. Following is the schedule the committee has adopted for bicycles, motor cycles and motor cars: Bicycles to be taxed \$1.20 per seat; motor cycles to be taxed \$5; motor cars, up to 9-horsepower, \$18; from 9 to 12-horsepower, \$28; from 12 to 16-horsepower, \$36; from 16 to 24-horsepower, \$44; above 24-horsepower, \$44 plus \$1 for each additional horsepower up to 60; above 60-horsepower, \$100. Taxicabs and motor buses are to be taxed \$7.20 per seat if they have four seats or fewer; \$5 if they have 5 to 10 seats, and \$3 if they have more than ten seats. Motor trucks and delivery cars are to pay a tax based upon their horsepower, the amount to be one-third of the tax imposed upon pleasure cars. The tax is creating particularly acute discussions everywhere.



# MOTOR CAR DEVELOPMENT



THERE are two Peerless models for 1910, a four-cylinder type, known as model 27, and a six-cylinder type, designated model 28. Both are alike in design and use the same twin cylinder castings with 4½-inch bore and 5½-inch stroke. The Peerless Motor Car Co. expects to build in all 1,600 of these at its enlarged Cleveland factory for next year's market, and it is already delivering at the rate of two a week, the factory working full force with upward of 1,500 men on the pay roll.

The 1910 Peerless scarcely can be distinguished from the 1909 as far as body appearances are concerned and those who expect to see a new body style will be disappointed. The body lines are identical with those of the present season, but the acute observer will note that the change-speed and emergency brake levers are slightly in advance of those on the present season's models, which has been brought about by supporting the transmission set from 6 to 8 inches nearer the front on the frame and bringing it well under the front floor boards where its accessibility is greater than if further to the rear.

#### Some Slight Changes

Although externally the 1910 Peerless is a duplicate of the 1909, there are some slight yet important changes in the chassis, although the general Peerless scheme of design has been continued unchanged. A few examples, however, will suffice to show the nature of the improvements: A new carburetor as illustrated in Fig. 1 is used which is considerably different from that of the present season. It is carried low down on the crankcase so that there is a positive gravity gasoline flow irrespective of the grade on which the car is traveling. The intake manifold is, roughly speaking, a Y with stem W waterjacketed throughout its length and the auxiliary air valve X under spring control, located in the angle between the pipes going to the front

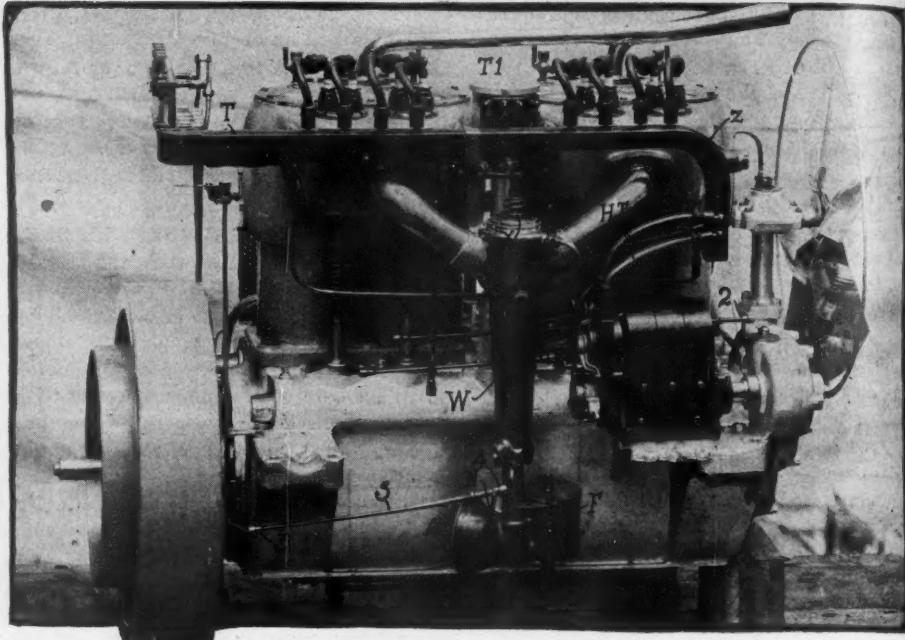


FIG. 1. PEERLESS MOTOR SHOWING NEW CARBURETOR

and rear castings. The float chamber F contains a metal float as used by the company for years, and A shows the main air opening. The vertical spraying nozzle is in the base of the venturi-shaped strangling tube at a point indicated by the arrow N. S marks the connections for the shutter valve used to facilitate starting the motor in cold weather. The throttle is a butterfly type, located close to the branching of the manifold and is operated through the connection T which passes through the stem of the auxiliary air valve to the manifold. As in previous Peerless models this throttle is actuated upon by a centrifugal governor, located on the pump-shaft within the housing C, Fig. 2, and the connections from it are shown.

Another change in conjunction with the motor is that all throttle and spark connec-

tions are of the ball-and-socket type, these being illustrated at 1, Fig. 1, and 2 and 3, Fig. 2. This ball-and-socket variety has replaced the clevis or yoke type of the present season.

#### Minor Motor Alterations

Three other minor motor changes have been made. Of these the most important is that the bank of five pumps for the oiling system which this year were carried on the car dash are now located in the oil reservoir R, Fig. 2, at the left rear of the motor and now all that is carried on the dash in the lubricating system is the bank of five sight feeds from which the oil flows to each of the cylinder castings to the front and rear crankcase compartments and to the sand gearing. The two oil leads to the cylinders branch when opposite their respective cylinder castings, one of the

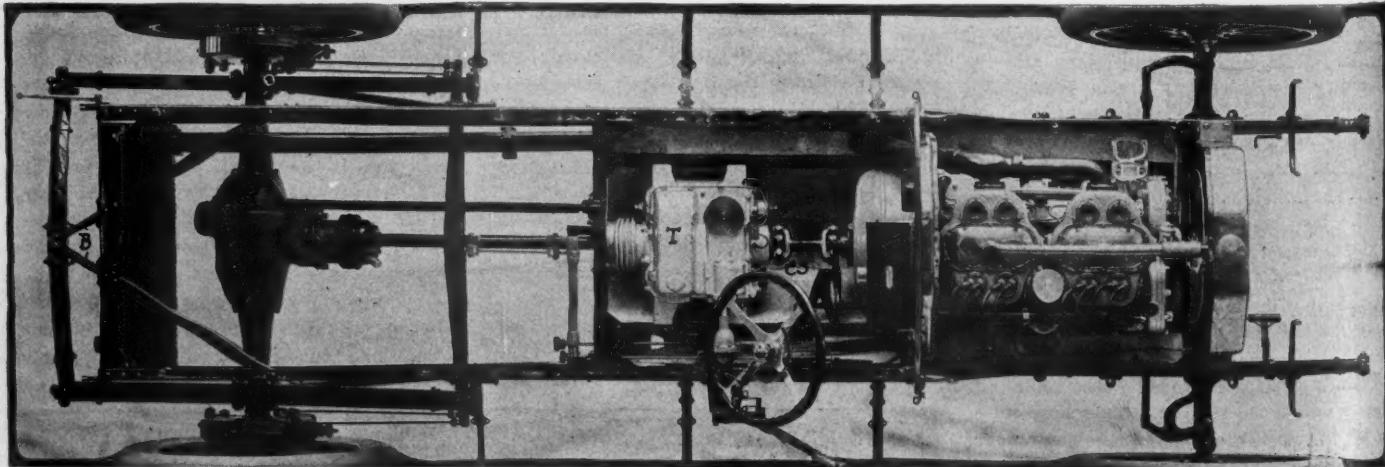


FIG. 3. IN 1910 PEERLESS CHASSIS THE GEARBOX IS MOVED FORWARD 8 INCHES

## TWO 1910 PEERLESS MODELS

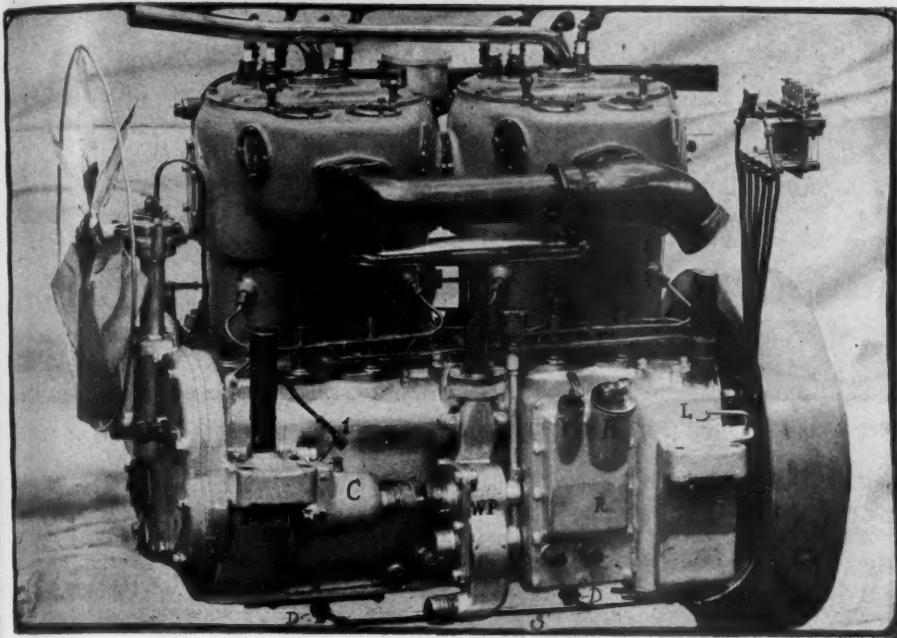


FIG. 2. EXHAUST SIDE OF PEERLESS MOTOR

branches going to each cylinder at the points P, Fig. 2. The oil reservoir R has a three-way valve V by means of which and pump H it is possible to inject oil direct from the reservoir to either the front or rear crankcase compartment. A commendable novelty in conjunction with the oiling system is that in the base of each part of the crankcase is a drain cock D which connects by a linkage X with a lever L at the left end of the crankcase Fig. 2 and by the simple turning of which the drain cup may be either opened or closed. This is a great convenience and will be appreciated by owners who have frequently had to reach down between the crankcase and the dirty mud apron to reach the drip cocks in order to drain the oil from the crankcase.

Two changes are noted in the ignition scheme of the new Peerless cars: Most

important of these is the use of the high-tension magneto in place of the low-tension type as heretofore used. With the low-tension type this season it was necessary to have a non-vibrating coil on the dash, but for next year the use of either the Bosch or Eisemann high-tension types eliminates this dash coil. As this year, so next, the ignition system is a complete double one, the magneto with its set of plugs constituting one; and a storage battery, timer and set of plugs with a six-unit coil on the dash comprising the other. Each system is independent of the other, although the spark plugs are located side by side in the same valve caps. There is an improvement in the wiring in that the tubing T in which all of the high-tension wires are imbedded curves downward at its forward end at heretofore. The reader will note the bend

at Z toward the magneto, thereby allowing of shorter high-tension wires HT. Each high-tension wire from the plugs to the terminals projecting from this bar has a socket type of connection and that also where the wires attach to the commutator T1 this same form of connection is used.

A slight change in the cooling system is that the fan is gear-driven as at present, but spiral gears are used to transfer the power from the motor to the vertical shaft and from this shaft to the fan hub. The waterjacket, radiator and water pump construction remain unchanged. The water pump WP, Fig. 2, is of the gear type with herringbone gears.

Leaving the motor, the first change noted is shown in Fig. 3 top view of chassis in which the selective gearset T is carried from 6 to 8 inches nearer the motor than heretofore, thereby reducing considerably the length of the clutch-shaft CS. The design of the gearset remains unaltered, the company continuing with the four, forward speeds with direct drive on the fourth and using a reverse clashed instead of being slid into mesh.

Fig. 4 shows the gearset with the cover removed exposing all of the gears, also the reverse pinion in the cover part as well as the case complete with the cover on. The main change is that now the shifter rods with all shifting parts are entirely within the case, there being a separate cover plate CP used where the shifter mechanisms are contained. Most important in the case is that the cover part C is merely a top plate and that the gearbox G is really a one-piece casting and is not split in the plane of the bearings of the main and counter-shaft as it is this year. This is a characteristic Peerless construction and has been used in the one-piece crankcase for a couple of seasons. For next year this one-piece construction has been introduced in the gearbox as illustrated and is also used

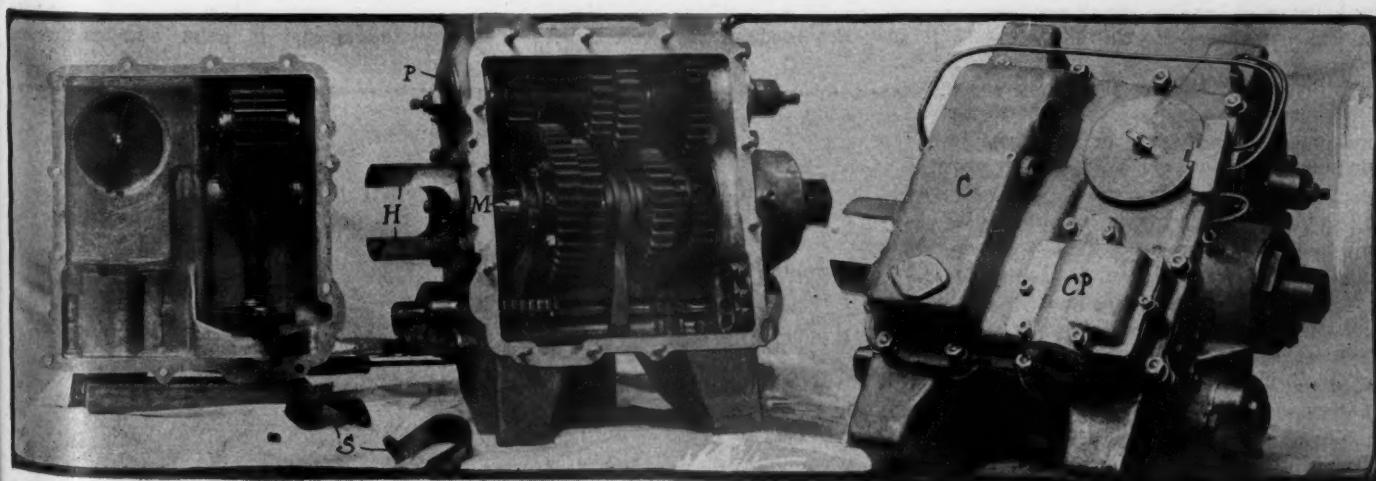


FIG. 4. THE 1910 PEERLESS GEARBOX ENTIRELY ENCLOSES THE SHIFTER PARTS

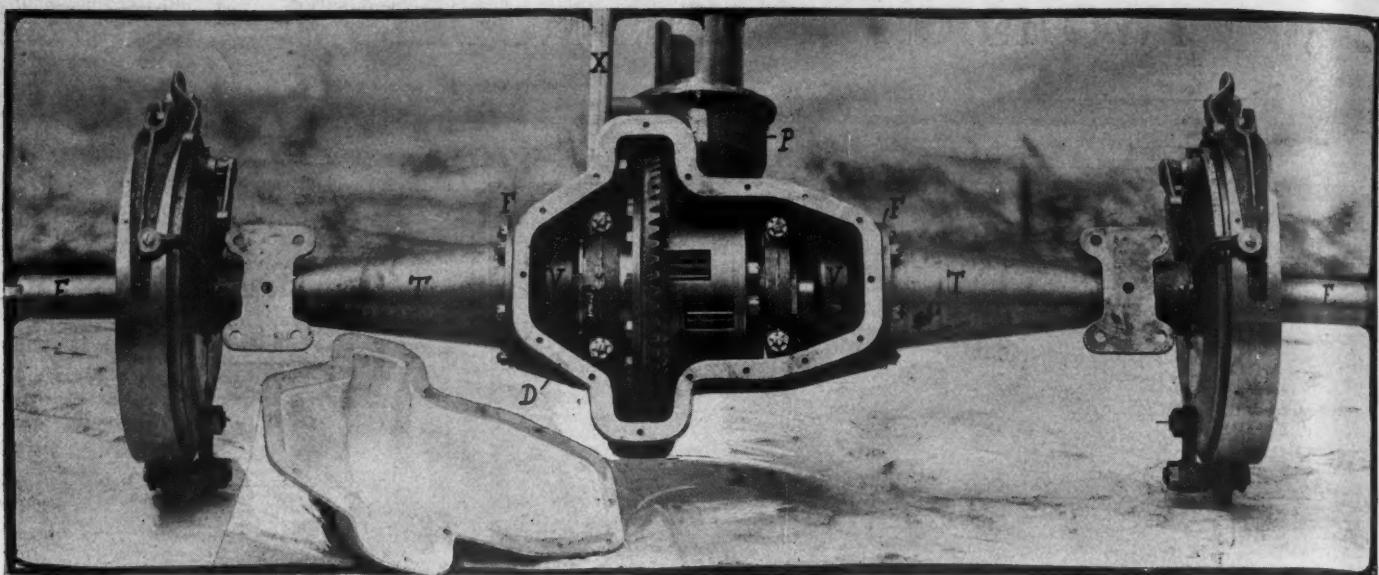


FIG. 5. NEW THREE-PART HOUSING ON 1910 PEERLESS CARS

in the cast steel housing for the differential in the rear axle. This year this part of the rear axle housing D is split in the middle line, but a reference to Fig. 5 will show that for next year this housing is split  $2\frac{1}{2}$  inches above the axle line, so that the tapered axle sleeves T bolt direct to this casting and the cover plate C is a light aluminum case which serves no other purpose than that of retaining lubricant and excluding dirt. These three examples of one-piece construction in these three important castings in the car show a notable advance in which simplicity and strength are the points aimed at. Reverting to Fig. 4 of the gearset, a change not to be overlooked is that the clevis ending H of the mainshaft is now formed integrally with the shaft, not being a separate piece as heretofore. Also new in connection with this shaft is that the hardened steel U pieces S are fitted within the jaws of the joint H and can be replaced should wear take place, which replacement is a simple matter in comparison with replacing the mainshaft M and its integral ending H. With one-piece construction of this gearbox every precaution has been taken to prevent leakage of oil through the bearing holes in the end of the case, the cover plates P being used for this purpose.

#### Housing Construction of Rear Axle

Reference has already been made to the housing construction of the Peerless rear axle, illustrated in Fig. 5. For next year this housing is a three-part affair, consisting of the one-piece cast steel differential housing D and the two bell-shaped sleeves T which are forgings drilled at the ends E to take the axle driveshafts and hollowed at the flaring ends where integral flanges are formed by which these forgings are bolted to the differential castings. There is no brazing in conjunction with this housing. The opening in top of differential casting D is of sufficient size to allow of removing the differential bodily. The pinion within the housing, as indicated by

arrow P is located between two annular ball bearings, each of which is a fit within an integral ring seating in the casting D. Apart from the housing this rear axle is the same as at present. Each of the axle driveshafts contains a universal union at V, this union taking the form of internal and external gears and is used to allow of a 2-degree camber for the road wheels. A new torsion tube X is fitted, this being a channel steel piece of special depth at the rear where it bolts to the differential casting. This axle carries internal and external brakes, the diameter of which is 1 inch greater than on the present season's models.

#### Features of Running Gear

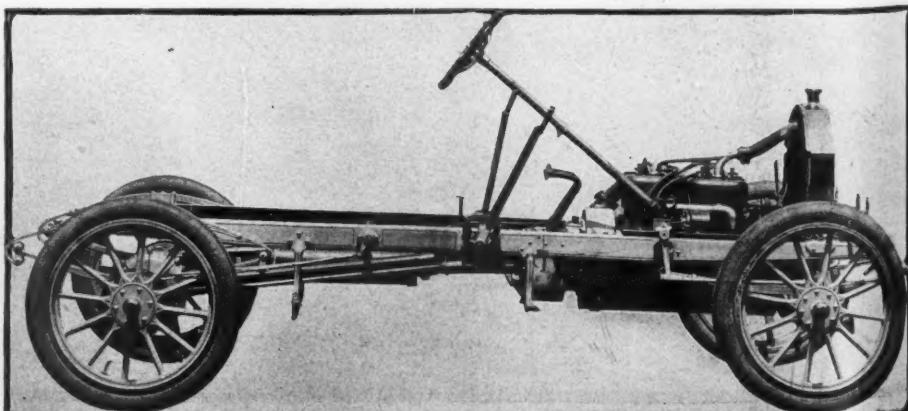
A couple or three alterations are noted in the running gear; first comes the use of longer springs, the front semi-elliptics measuring 2 inches longer than this year and the side members of the rear platform spring having been increased from 50 to 54 inches. Adding 4 inches to the length of the rear springs and 2 inches to the front ones has not increased the wheelbase, but this is nearly all taken up by the bracket B, Fig. 3, which supports the center of the rear cross spring on the frame, being made longer. A tire difference is that  $5\frac{1}{2}$ -inch sizes are used on the rear instead of 5-

inch sizes. The gasoline tank capacity has been raised from 17 to 22 gallons. One notable factor in conjunction with Peerless cars for next year is the selection of foreign materials for many of the car parts. In this category might be mentioned the use of French cylinder castings and foreign gear blanks as well as imported transmission-shafts, front axles, propeller-shafts and rear axle driveshafts.

#### COLE FOUR-CYLINDER CAR

A new competitor, manufactured by the Cole Motor Car Co., and distributed by the Henderson Motor Sales Co., Indianapolis, Ind., has entered the lists of the motor car trade for 1910, in the shape of a four-cylinder four-cycle water-cooled machine which is known as the Cole 30. The prominent features of this product are: the unit construction of the power plant which is supported by four legs on a sub-frame, its enclosed flywheel and clutch mechanisms, the shaft-drive with the propeller-shaft enclosed in the torsion tube, the thermo-syphon cooling system, and dual ignition. It has a 108-inch wheelbase, a standard 56-inch or a 61-inch tread, and is equipped with 32 by  $3\frac{1}{2}$ -inch tires.

The motor is of the vertical L type with cylinders cast in pairs, and its freedom

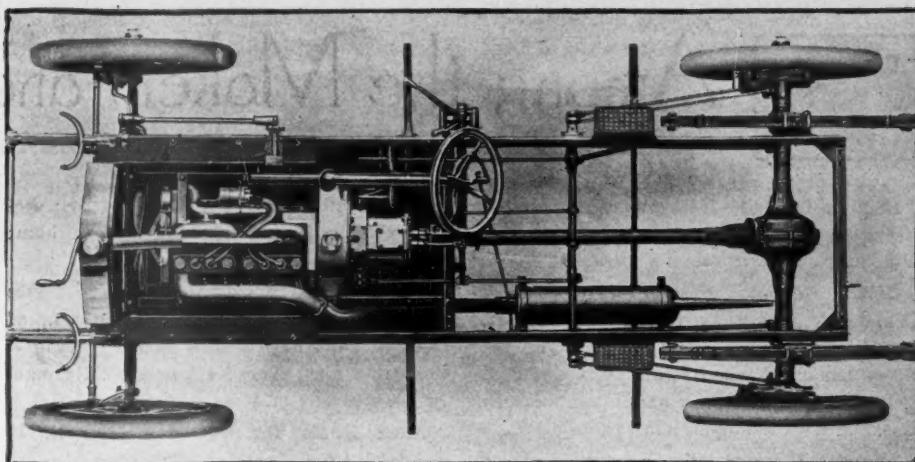


SIDE VIEW OF COLE FOUR-CYLINDER CHASSIS

from an excess of appurtenances is marked. The valves, which are adjustable, are all on the left side of the motor, and quite readily accessible through the convenient arrangement of the intake and exhaust piping. They are operated from a single camshaft contained in the crankcase of the motor, and the timing gears run in a bath of oil in an oil-tight housing cast integral with the forward end of the crankcase. A crankshaft, which is supported on three large bearings in the upper half of the aluminum crankcase, is employed; and access to the connecting rod bearings, for inspection or adjustment, is attained by removing the lower half of the crankcase.

The lubrication of the motor is by splash in which the oil level is maintained in the crankcase-pits by means of a positive plunger pump located in the oil reservoir integral with the motor, and a ball gauge on the left-hand side shows the level in said reservoir. The features of the cooling system are: the thermo-syphon principle employed, the vertical tube radiator of special design, and an adjustable belt-driven fan. Ignition is jump-spark from a dual system in which the current furnished from a Splitdorf magneto, or a set of dry-cells, is rendered high-tension by a non-vibrating coil, and distributed through a timer on the magneto. Carburation is by means of a standard Shebler carburetor of the float-feed type with a spraying nozzle and an auxiliary air inlet; and the feed, from the 14-gallon tank located under the front seat of the car, is by gravity.

The clutch is a leather-faced cone of the self-centering type, and thoroughly enclosed in the flywheel housing which is cast integral with the crankcase. To this flywheel housing the case of the clutch mechanism is bolted, and to it in turn is attached the change-gear case completing the unit power plant. The transmission is of the selective type, giving three speeds forward and reverse, and a locking device is provided on the shifting rods to avoid bringing more than one set of gears into mesh at one time. Annular ball bearings are used on the mainshaft of the transmission and the gears are carefully heat-treated and hardened. A single universal joint enclosed in a grease-tight case is employed



TOP VIEW OF CHASSIS OF COLE TOURIST CAR

between the transmission-shaft and the propeller-shaft; and the torsion tube in which the shaft is encased is flexibly connected to a channel cross member of the frame.

The running gear is attached to a frame of plain straight channel steel construction, with two cross sections to support the side members of the sub-frame. The tubular rear axle is of the floating bevel gear type with a bevel gear differential and Hyatt roller bearings; and the front axle is a one-piece drop forging of I-beam section. Ball bearings are used in the front wheel hubs; and the steering gear is of the worm-and-sector type, with the drag-link in front of the axle. The service brakes are of the internal expanding type, operated by a pedal, and the emergency brakes are of the internal expanding type controlled through an equalizing shaft from a side lever. Semi-elliptic springs are used in front, and those in the rear are full-elliptic of the scroll pattern.

Control of the motor is by means of spark and throttle levers over the steering wheel, the change gear and emergency brake levers are at the right of the driver's seat and the clutch and service brakes are operated by the left and right pedals respectively.

#### NEW DOOLITTLE RIM

A new demountable and quick-detachable rim is being put on the market by the Doolittle Rim Co., Ltd., 1666 Broadway,

New York city. One of the claimed Doolittle features is that it is impossible for the rim to rust fast to the wheel. It also is asserted the rim can be contracted on the wheel with a force of over 10 tons, thus making it impossible, it is claimed, even in the case of an accident, to tear the wheel away from the rim. The side flanges which correspond to the ordinary clincher part of a standard clincher rim, are solid continuous rims of high-grade steel. These are held in position by a solid up-turned flange on the rim. The special point in connection with this new rim is the means by which this new rim itself is contracted on the rim. Two screw bolts are operated by a single ratchet wrench. By turning these screws simultaneously—using a special wrench—the rim is contracted on the wheel. These rims are the invention of Dr. Doolittle. They are sold in sets of five, the extra rim carrying a fully-inflated tire ready for the road.

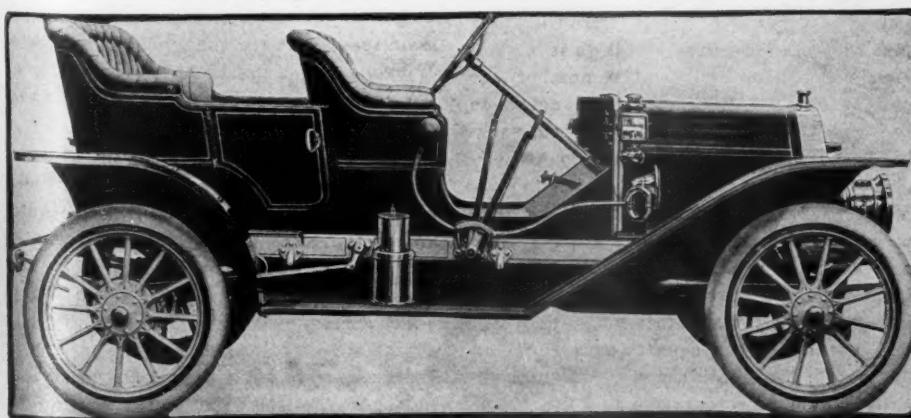
#### MOTOR CAR LITERATURE

The Fisk Rubber Co., Chicopee Falls, Mass., is mailing an attractive booklet which describes and illustrates the company's removable rims.

"The Sales Booster," issued by the Winton Motor Carriage Co., Cleveland, O., made its debut this month, and the title tells the tale.

The Lovell-McConnell Mfg. Co. has issued an exceedingly attractive catalog on the Klaxon horn, under the caption "The X-Ray of Sound." Illustrations of the complete horn, an interior view, and the various parts in detail are well illustrated. It has a colored embossed cover.

Interesting to motorists will be the road book recently mailed by the Automobile Club of Pittsburg, which contains routes galore in and out of Pittsburg, the greater portion being in the state of Pennsylvania, a few extending into Maryland, some into Ohio and other nearby states. Still more valuable information is given, such as the different makes of cars represented in Pittsburg, the Pennsylvania motor vehicle law, and extracts from other state laws, etc. The road book is a useful one for club members and other clubs would do well to get up similar ones.



FIVE-PASSENGER COLE TOURING CAR



# Among the Makers and Dealers



**In New Garage**—Holloway & Patterson, district agents for the Buick at Janesville, Wis., now occupy their new garage.

**Opens Chicago Branch**—The General Vehicle Co., of Long Island City, N. Y., manufacturer of commercial electric vehicles, has established a branch in Chicago. P. C. Chrysler has been appointed western manager with headquarters there.

**Another Convert**—The stockholders of the Findlay Carriage Co., a manufacturing concern at Findlay, O., at a meeting held this week decided to engage in the manufacture of motor cars. The present plant will be enlarged and thoroughly equipped for the purpose.

**Kinsey Moves to Toledo**—Isaac E. Kinsey and his office force of nine men have removed their families from Dayton to Toledo, and have assumed their duties with the Kinsey Mfg. Co., in the new building which has just been completed at Auburndale. The new machinery is being rapidly installed and it is expected that 600 men will be employed within 60 days.

**Another Kissel Plant**—The Kissel Motor Car Co., of Hartford, Wis., has started construction work on a new factory building, 50 by 130 feet in size, and four stories high. A new warehouse, 220 by 44 feet, and two stories high, is nearing completion. The output is being increased so greatly that the buildings are needed at once and work is being rushed.

**Plans Commercial Garage**—Plans have been ordered by the Indianapolis Motor Car Co. for an addition to its building which will give the company twice its present capacity for handling cars. The addition will be a two-story structure 67 by 126 feet and will cost \$15,000. The company sells commercial cars exclusively, selling them on a maintenance contract.

**Taxicabs in Indianapolis**—The Frank Bird Transfer Co., Indianapolis, has introduced the first taxicabs in that city, placing three Coppers in service. In design the cars are similar to other taxicabs, except that they do not have a registering speed device, the charge being based on certain districts. Two other companies expect to have taxicabs in Indianapolis within a few weeks.

**Schwepp & Wilt Move**—Schwepp & Wilt, of Detroit, manufacturers of turned metal parts, have moved into larger quarters at the corner of Meldrum and Champlain streets. They recently have added to their equipment a large number of automatic and handscrew machines to be used in the manufacture of steering gears, steering reaches and screw machine products. The concern is officered by the following: President, W. H. Schwepp; vice-president

and general manager, A. D. Wilt, Jr.; secretary and treasurer, Marvine Gorham; factory manager, F. R. Heym.

**Close With Grabowsky**—Representatives of the Grabowsky Power Wagon Co., of Detroit, have closed with Hawley, King & Co., of Los Angeles, and Waterman, Brother & Co., of Fresno, Cal.

**More Room for Goodrich**—The B. F. Goodrich Co. has moved into new and more commodious quarters at Woodward and Garfield avenues, Detroit. There is about twice the floor room that was afforded by the old quarters at 266 Jefferson avenue.

**Would Keep Plant**—Overtures have been made to the Dowagiac Motor Car Co., of Dowagiac, Mich., by other Michigan cities seeking the location of the plant. The Dowagiac common council, however, has taken an interest in the matter and will work to keep the plant here.

**Making Bodies**—William J. Hughey, for 17 years president and superintendent of the Chicago Coach and Carriage Co., of Chicago, has established the firm of William J. Hughey & Son, at 1238-40 Michigan avenue, Chicago, where he will design and build limousine bodies and paint, trim and repair.

**Elects New Officers**—The Wood Electric and Mfg. Co., of South Bend, Ind., at the annual meeting of the stockholders elected the following directors and officers: W. F. Wood, president; D. M. Wood, vice-president; W. G. Crabill, secretary; C. H. Harper, treasurer. The company has recently perfected a new motor car engine and is erecting a new factory to accommodate its increasing business. The capital stock has been increased to \$50,000. The entire output of motors has been contracted for for 1910.

**Houses Scarce in Flint**—Because of a dearth of dwelling houses in Flint, Mich., 2,000 persons, including employes of the motor car factories, have been living in tents in Oak park. Now residents of the vicinity have made complaint and the police have notified the squatters that they must move. Where they will go is a problem. Three hundred of the number are children. These squatters have not been living in tents and shacks made from packing cases because they wished to. They simply cannot get houses in which to live. Virtually all of the men are receiving good wages, some even have money in the bank and some own building lots. What may be called the suburban section of Flint has been platted by real estate concerns which will not allow the squatters to camp on their land. A month ago a Cleveland company sent a representative to Flint to arrange for the building of 1,200 cottages,

but for some reason the plan fell through. It is probable that the workmen will have to go into the country some distance.

**Gets Velie Territory**—The Bennett Auto Co., of Sioux City, Ia., has taken the Velie agency in Sioux City and territory and will act as distributor in fifty-three counties of Iowa, Nebraska and South Dakota.

**Packard's Hartford Location**—The Packard Motor Car Co. has secured a third of the floor space of the R. D. & C. O. Britton salesrooms for its Hartford, Conn., branch. The new salesroom is in one of the best locations in the city on Allyn street, along the row.

**Tire Change in Boston**—W. Mason Turner, New England representative of the American Simplex, in Boston, has changed his headquarters to the office formerly occupied by the Goodyear company on Dartmouth street near Boylston. Walter C. Cady has been added to the sales force.

**Building in Baltimore**—The Ford Automobile Co., of Baltimore, will build a new garage on West North avenue, adjoining St. Luke's hospital. The plans provide for a two-story structure. The frontage on North avenue will be 40 feet and the structure will extend to a depth of 110 feet. The showroom will be on the first floor and the offices and repair room on the second.

**American Simplex Move**—The American Simplex Co., of Boston, formerly located at 10 Columbus avenue, is moving into larger salesrooms at 261 Dartmouth street. W. C. Cady, formerly with the Packard, has joined the sales force. George S. Waite has resigned as sales manager of the Packard Boston agency and accepted a similar position at the Simplex company's factory office.

**Big Garage for Janesville**—The Janesville Motor Car Co., of Janesville, Wis., has started work on the construction of a garage at 140-146 North Main street, 44 by 110 feet in dimensions, two stories high, of brick and stone. The first floor will have no pillars or posts, giving an unobstructed floor space of more than 4,500 square feet. Wilson Lane is president and treasurer of the company, and Harry McDaniel is secretary and manager.

**Nebraska Events**—The Drummond Automobile Co., of Omaha, has taken the agency for the Herreshoff car. The Beatrice Automobile Co., of Beatrice, Neb., has awarded a contract for the construction of a new brick garage, to cost \$5,000, on North Fourth street. William Greve will shortly begin the erection of a new garage at Fairbury, Neb. It will be of brick. Two new garages are to be built at Hebron, Neb., this summer. William Bisner will

erect a brick building on Lincoln avenue, and J. Purdy, of Lincoln, Neb., has under construction a new garage.

**Cunningham's Store Ready**—Harry Cunningham is ready to formally open his new store at 234 Jefferson avenue, Detroit, where he will handle the Studebaker-E-M-F line.

**Now a Blue Book Man**—Fred Lee, who has been a member of the advertising staff of Motor Age, is now connected with the Official Automobile Blue Book, and in company with J. C. Dods left Monday on a route-making tour of the middle west.

**Disastrous Lansing Fire**—Fire caused by the ignition of leaking oil from a pipe caused the almost total destruction of the Atlas Drop Forge Co., of Lansing, Mich. The loss is estimated at from \$30,000 to \$35,000. The plant will be rebuilt immediately and will be much better than the one which was destroyed.

**Boston Reorganization**—H. G. Kilbourne has retired from the firm handling the Velie car in Boston and the firm has now been reorganized with Frank Coughlin as a partner with Frank Corlew. The new concern has opened its downtown headquarters on Hawkins street, where the entire building is devoted to the Velie interests, allowing a garage, repair shop, salesrooms, supplies, etc.

**Will Stay in Pontiac**—The rumor from Jackson, Mich., that the Oakland Motor Car Co. was about to remove its plant to that city is denied in Pontiac. According to a representative of the General Motors Co. the old Buick plant at Jackson will be put into commission for the manufacture of cars, but the Oakland factory will not be taken there. It is stated that the Oakland plant is preparing to build 7,000 cars in Pontiac the coming season.

**May Open Branch**—It is probable the Maxwell-Briscoe Motor Co. will establish a sales branch in Indianapolis at the beginning of next season, or possibly this fall. Just where the branch will be located has not been determined, but it is expected that a large building in the downtown district will be leased for the purpose. It was rumored last fall that the Maxwell in Indianapolis would be handled by a sales branch of the factory, but the agency for 1909 was left with the Fisher Automobile Co.

**Overland Places Big Order**—Charles E. Riess & Son, of East Orange, N. J., have taken the metropolitan agency for the Overland and Marion. Riess has contracted for 1,500 cars for 1910 and the new deal goes into effect September 1. The new agency will control the territory comprising New York, Brooklyn, Long Island, Staten Island and as far north as Poughkeepsie. Riess has leased the salesrooms and garage now occupied by the Stoddard-Dayton at the corner of Broadway and Fifty-seventh street. The Overland Automobile Co. already has contracted for 14,500 cars for 1910 with agents throughout

the country and is now making preparations to have the Indianapolis and Toledo plants working full force inside of a month.

**Remodeling Velie Store**—The Velie Automobile Co., of Omaha, Neb., is remodeling its garage at 1902 Farnam street, making two large display rooms for gasoline and electric cars. The walls are to be enamelled white.

**Goes to Chippewa Falls**—J. H. Raymond, for 6 years foreman of the repair department of the Old Motor Works at Lansing, Mich., has accepted a position as manager of the Chippewa Falls Automobile Co., an agency and garage concern at Chippewa Falls, Wis.

**New Boston Concern**—J. H. Stevens and A. H. Sowers, formerly connected with the Pope-Hartford branch in Boston, have formed a partnership and they have taken the retail agency for the Jackson and Fuller cars in the Hub. The new firm has secured quarters on Boylston street, in the heart of the motor colony.

**American Simplex Plans**—Plans have been completed for the American Simplex Motor Car Co. for an addition to its present factory building at Mishawaka, Ind. The new structure will be 240 by 172 feet and will be a duplicate of the present building. The additional equipment and space are needed from the fact that the company will require more room in order to get the cars for next year, the design for which has been completed and nearly the entire output of 1910 cars contracted for.

**Changes in Kansas City**—There is to be a radical change in garages in Kansas City, Mo. The C. L. Taylor Motor Car Co. that recently moved from its warerooms on East Fifteenth street to the old Moriarity garage at 1612-1614 Grand avenue, has exchanged leases with the Maxwell-Briscoe agency next door at 1616-1618 Grand avenue. A bigger home has long been desired by the Maxwell company and the present Taylor headquarters will be razed and an elaborate three-story building erected in its stead. The razing begins September 1, at which time the Taylor people will move

into the new one-story Maxwell garage and share quarters until the three-story structure is completed.

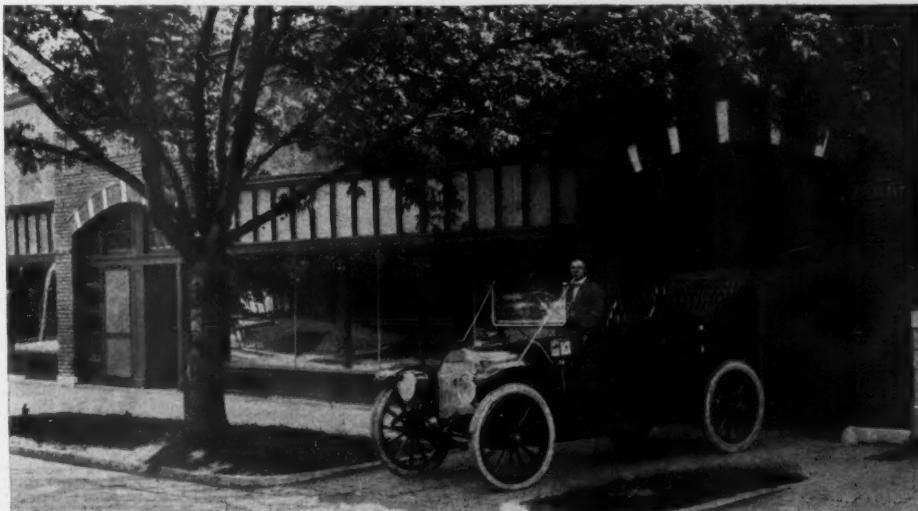
**Moon Man in Kansas City**—The Moon Car Co. is the representative of the Moon in Kansas City, which is located at 3320 Main street. Henry Merrill is president of the concern.

**Kearney's Showing**—In Kearney, Neb., and vicinity, eighty-seven cars are owned by residents. Of these twenty-eight are Ramblers, twenty are Buicks, fourteen are Reos and the rest scattering.

**Green Bay's Latest**—The Lucia Cycle Co., of Green Bay, Wis., agent for the Thomas, Chalmers-Detroit and Hudson, has moved into its new garage. The company is establishing branches throughout northeastern Wisconsin.

**Mitchell Six for Long Trip**—The Mitchell Motor Car Co., of Racine, Wis., last week shipped one of its new six-cylinder, seven-passenger touring cars, 1910 model, to New York for use in the first transcontinental military dispatch-bearing expedition ever attempted in the United States. The car will bear dispatches from General Leonard Wood, at New York, to General J. F. Weston, at San Francisco. The car will carry five regular army officers and tents and camping outfits. A rapid-fire rifle will be mounted on a special platform in front of the driver.

**Death of Boston Dealer**—Arthur E. Adams, who was one of the best-known motor dealers in Boston, is dead. Mr. Adams had been in camp at Lake Nagog for a few days with several of the other Boston dealers, and on Monday he complained of pains in the abdomen. So he decided to return to Boston. He grew worse steadily and when Boston was reached he was suffering very much. A physician was called, who ordered his removal to the hospital, where he was operated on, but he died Wednesday. Mr. Adams was only 28 years of age. His first venture in the motor car business was 1899, when he went to work for the old Mobile company at Tarrytown, N. Y.



GARAGE OF MOON CAR CO. OF KANSAS CITY, REPRESENTING THE MOON

## THE REGAL PLUGGER ENDS LONG RUN

baked mud under which the black treacherous ooze of the sink threatens to mire us, and finally down she goes into the black mass. Floor boards, clothing, shovels, everything, go under the wheels to save her and finally after an hour's hard work we regain the crust and comparative safety, for without the car in this sink, we would have had to walk 35 miles to water. Our 10-gallon supply by this time is exhausted and we are thirsty, not thirsty in the sense of just wanting a drink, but thirsty in as much as our lips are swollen, our throats parched, and the intense desire for water so great that we begin to realize the seriousness of our situation and the necessity for action. If the sun finds us here in the morning and without water, what then? We start at random anywhere, following an old wagon trail, for in darkness we have lost our sense of direction and plug along for an hour, coming at last to foothills and an old cabin at a deserted mine. On we go into the hills and encounter a well-traveled trail, our spirits rise and rounding a curve in the first streaks of dawn, discover a cabin from which smoke arises.

Visions of water and food cheer us up and we hustle for it. Sad delusion, the cabin is but a hut alongside a tremendous boiling pool of scalding water that issues from the earth, bubbling and steaming. We cannot drink the fiery, salty fluid, but by consulting our map we find with joy that this is the hot springs marked on our map, and our road is right. We turn westward and in  $\frac{1}{2}$  an hour are in sight of Leet's station and salt works, and as we drive in smell the savory ham and eggs of the Sunday morning breakfast being prepared in the cookhouse of the company.

We make a grand rush for the well—and such drinking! The employees state that the water is 10 per cent salt, but what of it? It's the best we have ever drank—all agree on that point.

We follow the abandoned right of way of the Southern Pacific which we join at Leet's, to Desert station, 8 miles west, and then strike south through the sand to Hazen, turn northwest along the new S. P. R. R. into Wadsworth, 20 miles, and then following the railroad through the mountains mostly on the old railway grade, which makes a splendid road but somewhat narrow and dangerous on the high fills arrive in Reno, 35 miles from Wadsworth, at 2 p. m.

### Regal Pluggers' Trip

San Francisco, Aug. 11—Reno, "where the Star of Empire pauses in its Westward flight and locates," so claim the people of Reno in glaring headlines which confront one from the newspapers and dead walls and in truth we are inclined to believe the claim a just one, for Reno is a beautiful city beautifully located at the very base of the noble Sierra Nevada mountains, whose

(Continued from Page 19.)

eternal snows temper the climate and supply a thousand crystal streams of pure ice cold water to irrigate the valley soil.

Motoring flourishes as a green bay tree in Reno, the streets are all newly paved with brick and asphalt and the surrounding roads are ideal. With a population of only 25,000, Reno boasts of four hundred cars and three well appointed garages. The majority of the cars are of the higher class and it is astonishing to note the general interest taken by every one in town in the Pluggers' trip.

Again we meet that bunch of good fellows so typical of every Western town, all anxious to do something for us and overwhelming us with the best the land affords. The McKissick Hotel has *real* porcelain tubs in which we wallow to our hearts' content and on the morrow rested and refreshed, we start southward on the last lap of the "long trail" to the Golden Gate.

The Sierras are unlike the other ranges we have crossed, no gradual ascents towards the main range is afforded by foothills but instead they rise abruptly and most precipitously 5,000 to 8,000 feet above the Carson valley.

We must go south for 50 miles to the Kingsbury grade they tell us, the road by Truckee being impassable, and finding the roads good we are away for Steamboat Springs and Washoe Lake, our pilot, Mr. Nixon, of Reno, setting a merry clip. The road winds through a narrow canyon along the Eastern slope of the mountains, skirts the shore of beautiful Washoe lake, and ascending a high drive, drops one suddenly into Carson City, the capital of Nevada.

Our start from Reno was at a late hour in the day and as we desire to reach Wally's hot springs at the foot of the pass by darkness we rush through the broad main street of Carson and are away into the open country to the south in short order.

The road to Wally's is superb and we arrive in good time to inspect the hot springs, which rise boiling and bubbling from the earth at the very threshold of as fine a hotel as one will meet in many a day's travel in this western country. As we retire we again inspect that great wall of granite whose base a scant hundred yards away rises and rises into the starlit night for 8,000 feet. Tomorrow we must conquer that summit in a 5-mile climb. The task looks great.

Six o'clock finds us away, and turning directly into a tremendous canyon, we confront the grade. The road is ankle deep in equal parts of fine sand and disintegrated granite in which the wheels sink to the rims and it ascends the mountain in a series of great sweeping "switchbacks winding snake-like back and forth so steep that in a quarter of a mile's travel you look down 200 feet on the road directly below you over which you have just come. The scene seems endless, at each turn magnificent views of

the Carson valley are obtained and as we rise unfolded away to west and south magnificent ranges of snow-clad mountains come into view. We reach the summit at last 8,400 feet above sea level and nail our sign to a convenient tree, commemorating the Regal Pluggers' trip.

### Down Grade to Pacific

We start abruptly down the Pacific slope among giant fir trees and come out at the shores of beautiful Lake Tahoe at Point Pleasant, the Nevada-California state boundary line at lunch time. The lake blue as the sky above, with its setting of snow-clad mountains, glimmers like an immense topaz 7,000 feet above the sea.

We would linger but the granite shaft we have just passed telling us that we are at last in California makes the Golden Gate seem near and we head away southwest for Placerville, all down hill, they tell us, and it surely is with the exception of a 2,000-foot climb to the second summit just beyond Tahoe, then comes 21 miles of coasting down to sea level through Echo canyon! Such a coast, with smoking brakes we pull up every few miles and cool the heated drums with buckets of water from the rushing mountain streams which parallels our course. The road built and maintained by the state is a credit to the commonwealth. Its cost must have been immense, hewn out of the cliff side, as it is.

We go down, down, down, in a seemingly unending succession of curves now under overhanging cliffs now buried in the semi-darkness of a pine forest. We reach Placerville at last and after a hurried meal head northwest for Sacramento, losing our way in the hills, come again, and finally at 1 a. m., cold and sleepy, reach the capital of California and meet our San Francisco pilots and escorts, distance 164 miles for the day's work, a good pull, we think, as one mile was in an unusual direction almost straight heavenward over the great mountains.

We now have an imposing caravan with the pilots and numerous escorting cars that have come out 155 miles to welcome us and get away on the last lap in great style the next morning. Down through Stoetoe and Livermore we go and meeting more and more escorting cars which in a long procession ahead of us kick up a sea of dust into which we "tag on," finally reaching Oakland. The ferry boat at the Oakland Mole takes us aboard at last and Frisco looms in sight across the bay.

We land and form in line and with a final rush up Market street and out Golden Gate avenue finish the great run amid a tooting of horns at the Regal store, 4,031.5 miles from New York, driving time 30 days, safe, sound and well, and in our hearts and minds nothing but gratitude and pleasant recollections to those and of those who have so kindly contributed to our success and pleasures en route.



# News from the Motor Clubs

**Mix Motors and Horses**—The Hoosier horse show is no longer complete without a motor car demonstration. On August 7 business men of Plainfield, Ind., gave a horse show, but preceded it with a motor car parade in which 100 cars participated.

**After More Members**—The Michigan State Automobile Association is preparing to campaign for more clubs in Michigan. It is expected that clubs will be formed in Muskegon, Saginaw, Bay City, Flint, Holland, Benton Harbor, Lansing, Grand Haven, Manistee, Ludington, Traverse City and Port Huron.

**Practical Road Enthusiasm**—The Altoona Motor Club, of Altoona, Pa., although in its infancy, has given evidence of its virility by pledging \$1,000 for the repair of the road from that city to Tyrone. Later it is proposed to tackle the awful stretch of road over Buckhorn mountain, which is usually in such poor condition as to practically preclude pleasure driving in the direction of Johnstown and Pittsburgh.

**Minneapolis' Orphans' Day**—The Minneapolis Automobile Club, of Minneapolis, Minn., will hold its orphans' day celebration Saturday, and fifty cars have already been donated to care for the 300 little ones. There will be plenty of good things to eat taken along and the trip will last all day. It will include a visit to the Minneapolis Automobile Club's country home at Bloomington and after lunch a ride will be taken to Lake Minnetonka.

**After Better Highways**—The York Automobile Club, of York, Neb., has adopted strenuous measures to secure the improvement of the roads leading out of York. In Nebraska money derived from the inheritance tax is used solely for road improvement. The York motorists have brought an injunction against the board of county commissioners of York county to restrain them from distributing this tax among the other towns of the state. They allege that the road districts leading out from York should receive the bulk of the money.

**Twin Cities Will Have Meet**—After many sessions of the state fair board it has been decided to hold motor races at the Minnesota state fair this year, Saturday, September 11, having been designated as motor car day. The sanction for these events will be applied for in the name of both the Minneapolis and St. Paul clubs, as both of these organizations will conduct the affair. Dr. C. E. Dutton, of the tours and contests committee of the Minneapolis Automobile Club, and W. L. Murray, of the St. Paul Automobile Club, have been named race managers and will call for help on members of the two organizations. In return for this service the fair board has agreed to allow the two clubs to have the

race track at some future date—possibly Fourth of July next—for a race meet of their own.

**Club at Falls City**—The Falls City Automobile Club, of Falls City, Neb., has been organized with the election of Dr. Miner president and W. H. Schmelzer secretary. The club will immediately inaugurate a good roads campaign in the vicinity of Falls City.

**Another Claimant**—It is claimed that Belmont, Wright county, Ia., has more motor cars to its 1,200 inhabitants than any other town in Iowa. There are thirty-three. Local dealers are rushed with orders and predict a bigger year next year than this. Grundy Center, Ia., with a population of 2,000, has thirty-eight cars.

**Drivers Must Register**—A form of application blank and a design for badges have been adopted by the Indianapolis board of public safety in connection with the new motor registration ordinance. In the future all drivers of motor cars and motor cycles must register, the fee for which will be \$1. This registration will be perpetual, unless the license is revoked for violation of motor laws. The badge will be an oval of German silver, on which will appear a representation of a motor car and the driver's number. This badge must be worn at all times.

**Takes Up Signboard Work**—The principal roads throughout Michigan are to be signboarded by the Michigan State Automobile Association. The first road to be marked will be that from Grand Rapids to Detroit, and following that the route from Detroit to Chicago via Kalamazoo. Individual clubs throughout the state have been asked to take charge of the work in labelling the routes most favored from their own cities to neighboring points. The Grand Rapids club will have charge of much of the work in western Michigan. The routes from here to Muskegon, Grand Haven, Lowell, Ionia, Lansing and other points will be laid out soon.

**Oil Experiment Succeeds**—So well has the oil experiment worked out as a dust-dispeller in the town of Wethersfield, Conn., where a section of the main highway was recently sprinkled that all the main roads of the town have now been thus treated. Motorists in general welcome the innovation and the surface of the highway is now worn down smooth and hard. Experiments are to be tried in the town of Manchester shortly with emulsified asphalt as a road-binder and also another preparation which answers the same purpose. The latter is mixed with water that is about eleven parts of water to one of the binder. A portion of the proposed experiments constitutes a private enter-

prise. At any rate the motorists traveling through this pretty town will reap the benefit.

**Sunbury Has a Club**—Sunbury, Pa., has just formed a new club, with M. W. Fisher as president and Harry S. Knight as secretary-treasurer. Through the efforts of Axtel J. Boyles and others Titusville has also organized a motor club. Both will probably join the Pennsylvania Motor Federation.

**Georgia League Planned**—A movement has been started here to form a state federation of clubs in Georgia. This scheme was brought up at the annual meeting of the Columbus Automobile Club. A committee was appointed to have charge of the matter and active work has been started to form a state league of clubs. At the annual meeting of the club Dr. C. Amory Dexter was re-elected president.

**Omaha's Offering**—The big motoring event of the season in Nebraska and western Iowa will be the endurance run of the Omaha Automobile Club in August. The World-Herald has offered a \$200 silver trophy for the winner and the club has put up an additional \$100 trophy. It will be necessary to win the trophies but once to secure their permanent possession. The run will be about 200 miles. Captain Buchan, who has had charge of previous endurance runs of the club, has been made chairman of the contest.

**Clubs for Sane Driving**—Secretary Frederick H. Elliott, of the American Automobile Association, has been in receipt of many letters during the past 2 weeks from motorists in different parts of the country and club officials, commanding the position taken by the national association for sane driving and better knowledge of the rules of the road. Energetic action has just been taken by the Springfield Automobile Club, each member being requested to report the number of any car seen exceeding the speed limit, while for a second offense the owner will be reported to the Highway Commission.

**Omaha Club Election**—The Omaha Automobile Club, of Omaha, Neb., has elected the following officers: President, W. R. McKeen, Jr.; first vice-president, Frank Colpetzer; second vice-president, Dr. J. P. Lord; secretary, E. L. McShane; treasurer, Gould Dietz. These directors were re-elected: Captain Thomas F. Buchan, A. P. Guiou, Thomas Fry and Louis Nash. The club is working to secure better roads and to this end appointed two committees—one to confer with the county commissioners to secure an improvement of the county roads, and the other to confer with the Commercial Club to bring about an improvement of the city streets.

## DISCUSSION ON CARE OF VEHICLE BATTERIES

SECRETARY Alex. Churchward in discussion said: "I noted in Mr. Beck's paper that he mentioned about a great deal of complaint that the electrical vehicle did not give the mileage, and the first thing done was to blame the battery, and not look through the vehicle and find out where the increased friction was. I wish to say I absolutely agree with him, that they should look over the vehicle and not blame the battery all the time. The bearings, trucks, alignment of the different driving parts all affect the mileage just as much as the condition of the battery. Of course, if the battery is in bad condition, you won't get your mileage. In the gas car if you have a little extra friction you simply use a little more gasoline but go slower; where with the electric vehicle, where you are carrying your battery with you, carrying the source of energy with you, it is not a fixed source because as you increase the rate of discharge you decrease your race, therefore any unnecessary friction is going to cut down the mileage. In modern vehicles great care has been taken to reduce the friction as much as possible by using anti-friction bearings and I think in those parts the friction of the vehicle should be looked into just as much as the battery end of it."

F. J. Newman: "There is one point I would like to mention in connection with the rack or lack of alignment in the cars, of which Mr. Churchward and others have spoken, and that is this, that in commercial vehicles, and, in fact, almost any vehicle, using hard rubber tires, it is very easy to determine whether or not axles are out of alignment by the way the tires wear. You will oftentimes see, for example, if your steering is hooked onto the left wheel or the right wheel, that the wheel on the other side shows abnormal tire wear; that is, the tire is not wearing evenly, but to one side. The same thing, of course, would happen with a pneumatic-tired car, but you would not notice it so much in wear as you probably would in connection with the cutting of the rim or something of that sort. But very often I have seen cars come into shops for repairs, and people said that they used too much power, that there was something wrong; and there was nothing more but for the repairman to look at the tire and see what the trouble was and to align the axles. So it is a good thing to look at the tires and see how they are working."

H. H. Rice: "The electric carriage has been a sort of a weak sister in motor car manufacturing, and most engineers have considered it somewhat beneath their dignity to spend much time on electric vehicles, but I see here two or three men—at least three—who rank as high as any—if the others will allow me to say it—and who have spent a good deal of time of their engineering life on electric vehicles, and they will tell you that it is a very interesting subject, al-

EDITOR'S NOTE.—The following is the discussion by different members of the Society of Automobile Engineers on the paper read by H. M. Beck on "Operation and Care of Batteries" before this organization at its mid-summer session in Chicago August 5, 6, and 7. The complete text of Mr. Beck's paper appeared in Motor Age August 12, pages 22, 23, 24 and 25.

though it seems so very simple, and that is, I think, the very thing that Mr. Beck brought out, the apparent simplicity of the vehicle is the principal fault. People can take an electric carriage and run it the first day that they buy it, and they can do just as well with it as an expert, barring the first fright of steering, and they can do all sorts of things, and there is nothing to do with it. But by and by it gives a little trouble, and the garage man is simply up a tree. I have had garage men who were well up in gasoline motor cars but didn't know anything about an electric carriage. But the electric vehicle has got its place in the motor car world, just as surely as the run-about has, or the big touring car. Nobody buys a limousine when he wants a little run-about, and the contrary is true. Nobody ought to buy an electric runabout if he wants to do gasoline stunts with it; and nobody ought to buy a limousine when he wants an electric runabout. So now people are beginning to put the electric car in its proper place, and I think there is a great future for the electric vehicle. The subject of mileage is something which, if we are not fully acquainted with the facts, scares people. The electric carriage has as much mileage as it needs for the city purposes for which it is to be used. While they cannot make long tours into the country, still no one expects to travel great distances in cars built for city use."

Scott Van Etten: "Mr. Beck refers to the change that takes place in the charge and discharge of the battery, and under normal discharge the sulphating process takes place, and it comes from one or the other sulphates of lead. I believe there are five, to the best of my memory. When a battery stands for quite a long time, there is what is called a white sulphate of lead. That is hard to get rid of, and requires a careful charge to handle the battery and bring it back into condition. Mr. Newman suggests that we rely on the hydrometer to tell the condition of our battery under ordinary service. The battery is, I presume, abused more than any other portion in service; it is neglected as long as the car gives service, and one does not check up to find if he is getting full discharge of his battery or not. There is a gradual formation of this sulphate of lead of which I spoke that is hard to get rid of, and which produces a false specific gravity; if you rely on the hydrometer readings you are apt to be misled, unless the battery is very carefully handled and you use the full charges and discharges. I think that is a point that in ordinary service would work against Mr. Newman's suggestion that we should rely on

the hydrometer. The ampere-hour meter has its limitations, but I believe by practice and by people who use cars, private owners, becoming familiar with it, it will be a very valuable adjunct to an electric rig. That is the way I handle the proposition."

H. M. Beck: "I would like to ask a question, how the gravity gives a false reading from the charge? Because with my experience in operating batteries it would be more responsive than to the ampere-hour meter, because if you are relying on the ampere-hour meter it would not show at all."

H. Van Etten: "Take a battery in bad shape that needs treating, you get a low reading. The average man does what you referred to yesterday—he flushes it with electrolyte. He thinks his plates are in bad condition. They are full of that sulphate of lead, and if you try to get rid of that with a high-gravity electrolyte, you simply keep on raising electrolyte to, say, up to several hundred degrees gravity, and you are in danger of losing your electrolyte. Where a battery is abused time and again, the average owner knowing nothing of that condition might lose his battery. I have had a good deal to do with batteries, and I find that is one thing we have to watch. We had to flush our batteries."

C. D. Firestone: "Mr. Rice, I think, struck the keynote when he said simplicity is the particular fault that misleads us all. I believe the ampere-hour meter is the proper thing, and I believe it is the thing we all watch constantly, because it is before us, and daily we are going over the same road. If the machine is laboring harder than it was yesterday, a close observer will notice it, and he will look for the trouble. His trouble is due to the simplicity of the trouble. We find nine times out of ten it is due to the shortage of water in the battery. Nine times out of ten our troubles have been traced to the fact that they neglected the water. A machine comes in, and they say it steers wrong, and they assign fifty different causes, when all they need is a little air in the tires. We properly inflate the tires and they go away with the machine well pleased, not knowing what we have done. Take the meter. A good, careful observer of his car keeps a record of all his chargings. We never have any trouble with that sort of a person. We have a great many women that run the cars a good many miles upon a charge. They keep a record of the charging, and they watch it so carefully that they can tell how much they have. We never hear of them. We make a request that they bring them to our factory every 2 or 3 weeks. They come in there in 2 or 3 months. As I say, the difficulty always arises from the most simple thing—neglect—lack of water, pretty generally. A machine comes in; they say it drags hard. It may be steering hard; or the trouble may be with the tires. We find maybe too much friction there. We go over all the bearings, and it

is practically a new machine. Personally, I think we get more out of that meter than any one person can observe, because it is before them all the time, and they notice the workings of the machine. I imagine if they had to use a hydrometer that very few persons would do it. But the meter is so simple that they would do it in their own garage, and would look at the cars after coming in and notice the charging and the miles."

F. J. Newman: "Mr. Van Etten sprung a new one on me in connection with white sulphates and false gravity readings. There have been a lot of theories going on in connection with storage batteries, and some theorists have said it is a hard thing to say on account of the fact that there are double reactions. I think, putting the thing in plain English, that the commonest and most accepted theory at the present time in connection with the white sulphate is this: That the sulphate that we get, due to the discharge when the peroxide or the spongy lead changes to lead sulphate, is exactly the same sulphate as the hard sulphate we get due to the standing, and it is only due to the crystallization; and the longer we let the thing stand, the larger the crystals grow, or else they become segregated, and in that way the contact is so far removed from good conducting surface that it takes a long time to break down. That may not be exactly it, but that probably explains it as simply as I can put it into words. As far as the false gravity is concerned, there can be no such thing. According to the theory of the battery, there are so many sulphate particles and so many of hydrogen. I suppose the chemists call them ions, or whatever they are, in electrolyte, and on discharge these sulphate particles combine or go into the plates, and on discharge they come from the plates into the acid, so that it is just a continuous reversal process. So many come out, and so many go in. And when the battery is full they are all in the electrolyte, and when it is empty there is as much out of the plates and have proper conductivity, until we get electrolytic action. So, for that reason, there can be no false gravity readings.

"I think the best test for that is if a person wants to see if a plate has more sulphate than another is to take a voltmeter with a stick of cadmium, because you can charge until your plate comes to a maximum, and when you continue to charge there is no increase in potential, nor is there any taking up in your plate. So far as the hydrometer is concerned, what Mr. Bentley said in connection with the reliability of the battery, that you can get the same thing day in and day out, that is true. No one would have you believe, as far as I am concerned, that anything else is true. A man can go out and break a battery jar, have a loose terminal, and the voltmeter is the only thing that will indicate from an external source that something is wrong in the battery. I do not think it is much trouble to design a car with at least one pilot cell, which will take the bearings and readings there.

"To show how that works out in practice:

We rate cars in certain localities as to the number of pounds gravity drop for one mile running. We find a battery of 112 ampere-hours with certain rigs, known as the M. V., would give a drop of 100 pounds specific gravity. If you go out and run your car for 5 miles, and you find that your gravity has dropped 10 pounds, you know that that has taken 2 pounds for a mile run, and you calculate 2 into 100 pounds, 50 miles, and you can very easily go to work and determine how far you can go and how much you have still got left in your battery. After all, the commercial battery is something we all hope to see in large installations, but in order to make them successful there ought to be somebody about the place that is competent to rate the thing in that manner, and you know very quickly how far he can run on his truck and everything."

Ernest Lunn: "I don't propose to get into any argument over the ampere-hour meter. For the last 6 months we have had upwards of fifteen ampere-hour meters in service on trucks, and we have yet to have our first case of trouble—that is, where the ampere-hour meter has misled us in any way. Once the needle stuck and did not revolve, but that was easily seen. We have gained from experience a sort of confidence in the meter which enables us to do more work with our rigs, with more certainty. I do not believe any one of the rigs has, since we put the meter on, been stuck from lack of current. The driver is so sure of the amount of current, available capacity, in his battery that he can tell within two or three ampere-hours of the limit or of the capacity of his battery; and inasmuch as it requires only from two and a half to three ampere-hours per mile, he can easily get back to the barn whenever he sees he is running close to his limit. I know that the ampere-hour meter is not a cure-all for battery troubles. I know that our specific gravity is something that we must not neglect, and all the arguments that Mr. Newman has advanced for the specific gravity and for the hydrometer hold practically good for the ampere-hour meter. You can tell the number of miles you can run, and if you have got a broken jar or lug, making the rig run slow, you can see by your ampere-hour meter that there is trouble, and you can confirm it by the fact that the rig is running slowly."

H. M. Beck, in closing the discussion, said: "I don't know that I can say very much more than I have already said. My position as I think I tried to express it, at least regarding the ampere-hour meter, is one of rather middle ground of the position taken by Mr. Lunn and the position taken by Mr. Newman. We think that the ampere-meter is a help and a step in the right direction, and under practical conditions will give good results. We do not think it is a cure-all, and my idea yesterday in bringing it in was to give a warning against what I think will happen, that the ampere-hour meter will take the place of everything else, as I feel sure if we do that we will run into trouble.

Now, as far as the indications of the ampere-hour meter and the gravity of the battery is concerned, the ampere-hour meter is a gravity. That is, it is almost proportional to the ampere-hours. So Mr. Newman's method gives ampere-hours as well as Mr. Lunn's. But as Mr. Newman has stated, under present conditions especially, ladies are not in position to take readings, and the ampere-hour meter gives them the most, the same thing. Therefore, our contention is that the ampere-hour meter is a help, but we want to emphasize the point—it is not going to cure all troubles. The possible one weakness is when you go back it is based entirely on gravity for its calibration. That is where the capacity is determined from charge and discharge, and not from ampere-hour readings, so it gives readings which will calibrate on gravity, and on that ground if gravity could be used it would be a more definite reading, but under present conditions it cannot be used, or is not used, and so the ampere-hour meter is a step in the right direction, and we think it will decidedly help conditions under which batteries operate. We have had it for service now for some 6 months on four trucks, and our men at the factory who are using them are very enthusiastic over them. But they feel, as I feel, that we must emphasize the point that they must not give up the gravity readings simply because you have an ampere-hour meter. I do not see how the ampere-hour meter in any way will overcome any of the difficulties that the gravity readings would not. In fact, I would rather depend on the gravity readings, because when the gravity gets low, as I stated yesterday, unless there is an actual loss of electrolyte due to a broken jar, it is evident that the plates will sulphate. If you are working with less than a sufficient charge, the garage man will discover he is low in capacity, and I think he is just as likely to doctor that electrolyte as gravity. I do not see how it would overcome that at all, and the thing to do is to correct that mistake, as we are trying to do, of doctoring the electrolyte. I think our position is clear. It is a middle ground. The ampere-hour meter has a use, as was stated in the paper. It is a good thing, and will help, but does not constitute all the attention that a battery should receive."

An ampere-hour meter is a device equipped with a large dial and a pointer which can be set by hand to any point desired. This pointer revolves in one direction during charge and in the opposite direction during discharge, and registers directly the ampere-hour output of input to the battery. The mercury in which the armature disk is submerged acts as a dash-pot, and seems to be very effective in damping the vibrations and jolts which such a meter has to stand. Many attempts have been made to develop apparatus which would automatically show the charge and discharge of a storage battery, but these have either been based on the wrong principles, or unable to stand the wear and tear to which they were subjected in ordinary electric vehicle service.



# From the Four Winds

N S E W



**Millionaires Building Garages**—Charles Allis and Robert Nunemacher, of Milwaukee, Wis., are building private garages at a cost of \$10,000 each.

**Last Toll Bridge Goes**—The one remaining toll bridge across the Connecticut in this state is now a free structure, that at Thompsonville being the last of the Mo-hicans. The stockholders have finally come around to accept the offer made for the structure. The freeing of the structure was duly celebrated by the motorists.

**Test of Waverley Electric**—An interesting test was made last week with a 1910 model by the Waverley company at Indianapolis. The car was run to Noblesville and return, with several detours from the regular route, the trip being 51 miles long and emoracing a number of steep hills. Following this it was run 15 miles over Indianapolis streets, making a total distance of 66 miles on one charge of the battery.

**Denver Makes a Claim**—In proportion to population Denver claims to lead every city in the country in the number of motor cars owned and operated. According to the records of the fire and police board, there are 3,754 cars and motor cycles in use. Of these 913 were registered with the board since January 1 of this year. Since June 30, when the new regulation of numbering motor cycles went into effect, eighty-nine motor cycle permits have been issued by the board.

**Detroit Booming Meet**—Chairman John Gillespie, of the Michigan State Fair Association's motor race committee, has received the promises of the Buick, Chalmers-Detroit, Ford, E-M-F, Maxwell and other racing teams for the meeting which will take place at the state fair track September 3 and 4. Events for Detroit and Michigan drivers and cars, obstacle races, races at different distances and special events for stock models have been combined and the whole program is considerably longer than anything before attempted at any local meeting.

**New Michigan Road Law**—An important measure in the interests of good roads is contained in the new Michigan law which will go into effect before the boards of supervisors of the different counties meet in October. One of the expensive features of the construction and maintenance of the roads in the Wolverine state has been the cost of labor, but the new law will relieve the situation if the supervisors feel disposed to act. According to the law, if the board of supervisors shall pass the necessary resolution, prisoners in the county jail can be forced to work on the roads. This will give the prisoners a chance to break

away from the monotony of breaking stone for a time and the cost of labor for improving the roads will be reduced to a minimum.

**Must Keep to the Right**—Kalamazoo, Mich., has started the enforcement of a new rules of the road ordinance which requires that all vehicles remain on the right side of the road. The police promise to strictly enforce the new ordinance.

**Foils Highwayman**—Dr. Earl L. Thudichum, of Baltimore, Md., used his motor car in an effort to run down several highwaymen who held up the physician and a party in his car in the suburbs of this city. When commanded to "throw up your hands" by one of the highwaymen, Dr. Thudichum instead guided the motor car toward the men and put on full speed. By the quickest sort of aerobic work, the would-be highwaymen managed to escape being run over and hiked it to the tall timbers in double-quick time.

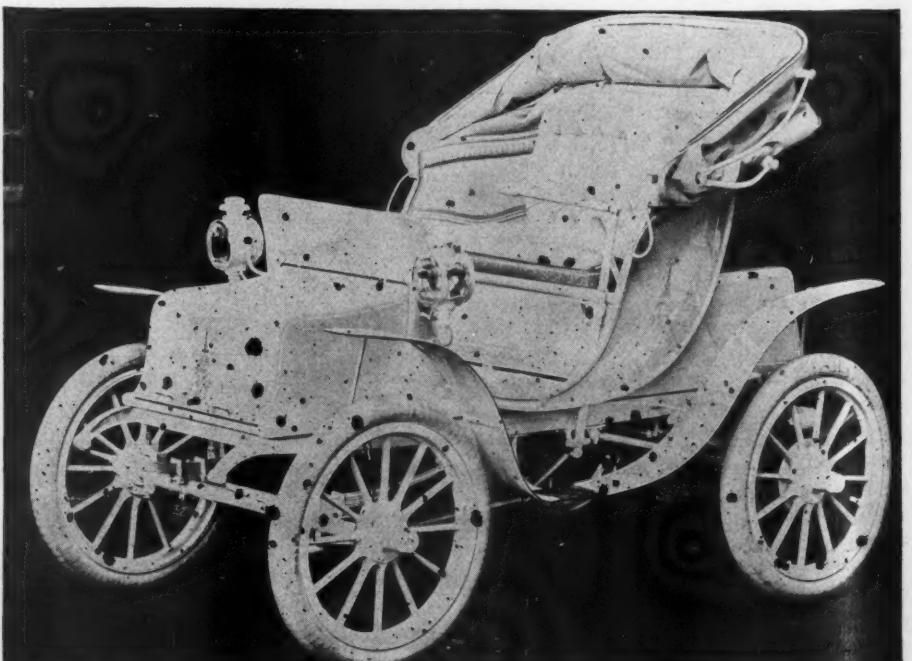
**Parade For the Capital**—Under the auspices of the chamber of commerce a motor car floral parade will be held in Washington, D. C., on the afternoon of September 30, the day after the finish of the Frank A. Munsey reliability contest. A silver cup, valued at \$600, has been offered as the sweepstakes prize and numerous other cups and prizes have been donated by local business men. A feature of the parade will be the section devoted to machines and trucks owned by the federal government. It is also expected that the Munsey tourists will have a place in the line. Governor Swanson, of Virginia; Governor

Crothers, of Maryland; Mayor Brightmyer, of Detroit, and several other men of prominence will compose the judging committee.

**Car For Night Patrol**—The Grand Rapids, Mich., police department is using a touring car as a night patrol wagon. In the outlying districts it was found impossible to make good time with horses, so the car was purchased. It is proving satisfactory.

**A New One**—A motor car as a preventive of the spread of contagious diseases, is declared by the health department of Portland, Ore., to be an absolute necessity. In urging this point upon the city Health Officer Wheeler declared that it was wrong for a health official to ride on a street car after visiting a case of contagious disease, and that a horse and buggy is too slow. Hence a motor car is essential to prevent the spread of the contagion.

**Baltimore Fights Dust**—"Baltimore, the Dustless City," will be the slogan from now on, for Street Cleaning Commissioner Wickes says he has effectually solved the dust problem by using oil to lay this particular annoyance to householders and the public in general. While the commissioners' efforts have only been in the shape of experiments, within a short while the oil scheme will be put in use all over the city. The colonel has also been trying out oil on macadam roads within the city limits and finds it an excellent preventative against the havoc wrought to these roads by the traffic of motor cars. He is confident that his plan will save the city



BAKER ELECTRIC VICTORIA BUILT FOR THE KING OF SIAM

thousands of dollars in its paving bills and will provide smooth streets to those sections now afflicted with the unsightly cobblestones.

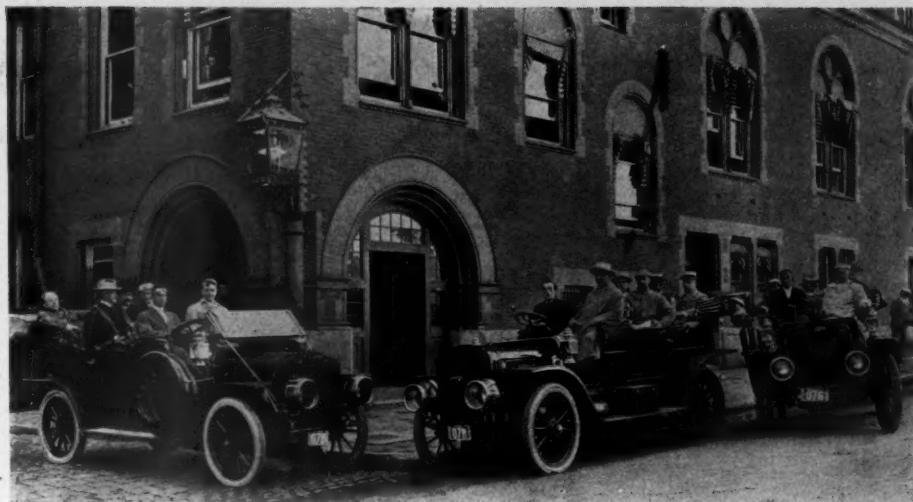
**Baltimore Wants Cars**—Chief Horton, of the Baltimore fire department, has recommended the purchase of two motor car fire engines for service in as many suburbs of the city. The apparatus will be put in service in the early fall. The chief declares the horseless fire apparatus is the best for service in outlying sections and he will promote the use of these in all the suburbs in due time.

**Motors in War Game**—Motor cars are playing an important part in the military maneuvers which will cover all the present week in Massachusetts and which began last Saturday. The White company is represented by four cars, three touring cars and an ambulance. These cars will be attached to brigade headquarters. The Rambler also will have a car used by Lieutenant Colonel Sullivan, of the Ninth regiment, M. V. M.

**Test For Amateurs**—Nebraska City is to have an endurance contest. The enterprise is fostered by R. A. Duff, of the R. A. Duff Automobile Co. The date set is October 8, 1909, and the test will be to Falls City, Neb., and return, a distance of 100 miles. It will be a sealed-bonnet contest, all cars being eligible up to 45 horsepower. Five control points will be established en route; the schedule time will be 2 hours 45 minutes for each 50 miles. Entry will be allowed from all counties south of the Platte river. It is an amateur contest.

**To Study Road Material**—A special committee of the American Society of Civil Engineers comprising W. W. Crosby, chairman; H. K. Bishop, A. W. Dean and A. H. Blanchard, secretary, has established headquarters in Providence, R. I., to make an exhaustive study of tars, asphalt and other bituminous materials now used in road construction with the end in view of ascertaining the best materials possible for the purpose. Circulars have been sent out broadcast to road engineers and others interested in the work asking them to supply data in connection with the subject.

**Electric for Siam's King**—A Baker electric victoria has been built to order for the king of Siam. The chassis and body are standard equipment. The body and running gear are finished in ivory. The top is made of special leather, enameled in white. The dash and fenders are in white patent leather. The side panels and front of the hood are emblazoned with the crest of the king of Siam. The car is upholstered in a delicate pale green broadcloth, the royal color of Siam, with silver gray Persian broad lace tapestry, puff rolls and silver gray silk cord and seaming lace. All metal parts are silver-plated and it has special silver electric lamps and meter case. The lever handles are of pearl. The hood has beveled glass curtain lights at each



WHITE STEAMERS BEING USED IN MILITARY WORK

side and in the rear. This elaborately-finished car is intended for the personal use of the king of Siam on state occasions in Bangkok.

**Sheboygan On the Map**—Sheboygan, Wis., now has 146 motor cars, with a population of 22,000. On August 15, 1908, only seventy-two cars were listed.

**Spooner Locates in Detroit**—F. Ed Spooner, of Spooner & Wells, photographers, New York, will make Detroit his home from now on. The firm of Spooner & Wells will not be dissolved for the time, but Mr. Wells will take charge of the New York end of the business, with Mr. Spooner in Detroit.

**Arrests Bottle Thrower**—The first arrest under the new ordinance in Council Bluffs, Ia., which prohibits the throwing of broken glass, bottles, nails, etc., in the streets was caused last week by Dr. Donald Macrae, president of the Council Bluffs Automobile Club. The ordinance provides a fine of \$15 to \$50.

**Buffalo Dealers On a Lark**—A great time was had by the members of the Buffalo Automobile Trades Association at their annual outing. The steamer Argosy and consort carried the party around Grand Island. A variety of games and other amusements were run off. Charles Benzing and G. H. Poppenberg composed the committee in charge of the affair.

**Tire Shooter Exonerated**—Police Commissioner William H. Luther, of Providence, R. I., has exonerated Patrolman Lewis H. Hall, who was complained of for shooting at a tire on the motor car of Joseph P. Bowles, of Pawtucket, recently. The commissioner said the officer was only doing his duty, and that the police of Providence have been instructed to use any means necessary to make motorists who insist on breaking the laws come to a stop when ordered. There has been much complaint about Massachusetts motorists crossing the line and speeding in Rhode Island, and when ordered to stop they have put on speed and crossed into the Bay state, where they have been im-

mune from arrest. That the Providence officials are determined to stop this is intimated in the exoneration of Policeman Hall.

**Columbus Meet Not Settled**—The racing committee of the Columbus Automobile Club has not closed arrangements for the September meet at Columbus, O., which was practically decided on several weeks ago. Some hitch over the use of the track of the Columbus Driving Association has taken place. It is believed that all friction will pass away and that the meet will take place either in September or the first part of October.

**Chalmers Leases Track**—The Chalmers-Detroit Motor Co. has leased the Grosse Pointe race track, in Detroit, distant less than  $\frac{1}{2}$ -mile from its factory, and has established headquarters there for its contest department with Manager Harry Bell in charge. A building has been erected and the members of the firm's racing team are busily at work preparing for the Lowell race. Matson, Dingley, Knipper, Gelnaw and Lorimer are now at work there and will shortly be joined by Vaughan. Next week the headquarters will be temporarily moved to the Lowell course. The Grosse Pointe facilities will be made permanent in all probability, however, as the training base.

**Realize Need of Roads**—Sioux City motorists have come to the conclusion that their only hope of having enjoyable country runs lies in the immediate betterment of the roads. Several events recently have been frustrated by the bad condition of the roads and the club is now determined to take action at once. The club planned a run to Le Mars, Ia., last week but at the last minute was compelled to give it up on account of the roads. Sunday a big delegation tried to make the run to Winnebago City, Neb., but only a few of the cars reached the destination. All of this has spurred the motorists to action and they are now urging with every show of success that the county officials get together and take action in the matter.

# The Motor Car Repair Shop

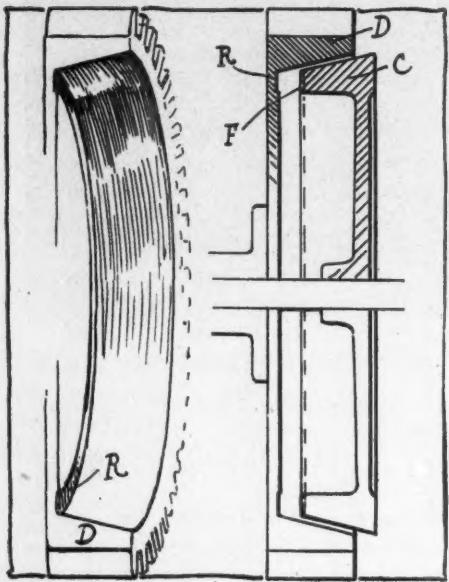


FIG. 1. THE CONE BOTTOMED IN THE CUP.

## LACING FAN BELTS

LACING a fan belt is a comparatively simple operation, but unless properly done a neat and durable joint is difficult to obtain. In lacing a belt with wire or leather a few preliminary precautions are necessary; the approximate edges of the belt should be cut straight and at right angles to the longitudinal edges, the holes should be exactly opposite each other, not larger than necessary, and distributed so as to weaken the belt as little as possible. Belts employed on motor cars are seldom wide enough for more than three holes in each end, which are placed as shown in Fig 2. As it is difficult to obtain raw-hide belt lacing narrow enough for these belts, it is often necessary to cut strips from standard laceings. This may be done as illustrated in Fig. 3. The knife used must have a keen edge, which may be obtained by drawing it carefully over a piece of emery cloth stretched over a flat surface, stropping it on a piece of leather or smooth piece of soft wood. It should then be held between the fingers and the palm of the hand so that the thumb may be used as a guide to maintain a regular width in the strip to be cut off; the lacing to be split should now be started for about 2 inches; the knife should then be placed on an unbroken edge of a board or the bench at an angle as shown, then taking hold of the strip to be cut off with the free hand and pressing the tip of the thumb of the other hand firmly against the board, draw the strip carefully upward. A little practice will show at what angle the knife cuts best. When the laces are cut, trim the ends to a long narrow point, to assist in lacing. Now, stick one end of the lacing through one of the center holes in the belt from the inside, or the face that lies next to the pulleys;

then do the same with the other end and draw the ends of the belt together. Next place one end down through the side hole in the opposite end of the belt and bring it up through the hole on the same side of the same end of the belt. Repeat this operation with the other end on the other side. Next tie the ends of the lacing together, cut off the ends, and the job is complete. The three straps on the inside of the belt will now be seen to run parallel to each other.

## TIGHTEN PINION BEARING

One of the bearings of a motor car, which is generally neglected by the average motorist, is that of the driving pinion. An adjustment on this bearing usually requires that the operator get under the car, which is one reason for its neglect, but some manufacturers make it accessible through the floor boards of the tonneau. It is important that adjustment be maintained in this bearing, as in all bearings, for lack of adjustment in this case is not only detrimental to the bearing itself, but also to the teeth of the pinion and driving gears, producing lost motion, misalignment, and consequent excessive wear. This adjustment should be made so that the greatest freedom of rotation is obtained with the least amount of lost motion.

## CARE OF THE HANDS

Much trouble and pain could be saved the repairman if proper attention were given the hands, and some of the most common methods of cleansing them avoided. If before tackling a specially dirty job, the crevices of the skin were filled with a good toilet soap there would be little trouble in removing the dirt when the job is finished, and the skin would remain soft and smooth. A coarse, hard skin is much harder to keep clean than a smooth, fine one, and the use of strong alkaline soaps and gasoline tend to make the skin rough and scaly. Most repairmen use soft soap and gasoline because it

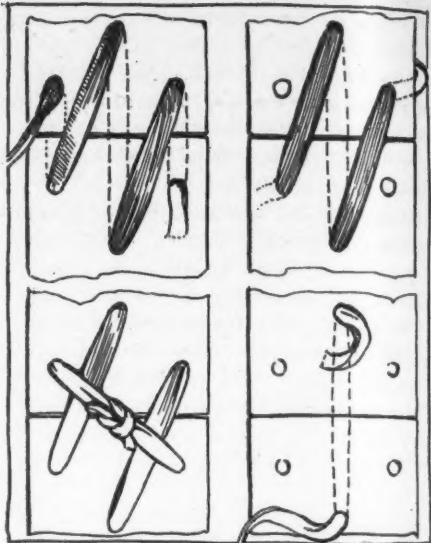


FIG. 2. LACING A FAN BELT

can be obtained free of charge, and this is, of course, a strong argument in its favor, but a handful of sawdust saturated with kerosene will be found just as cheap, more effective and less detrimental to the cuticle. In operations where acid is used, such as in soldering with zinc chloride as a flux, it is advisable to wear gloves, the soft cotton kind which may be purchased for 5 or 10 cents in almost any dry goods or furnishings store being most practicable. If this precaution is not taken, the next best thing is to wash the hands in clean warm water, without soap, directly after the operation, then rub the hands and especially the finger-tips with vaseline. This is to prevent the painful cracking of the skin due to the action of the acid, which is otherwise difficult to avoid.

## CLUTCH TRANSMISSION TROUBLE

After having given good service for a considerable length of time, and always responded to any adjustment made on the clutch collar which supported the dogs, trouble was finally experienced with both the high and low speeds of a transmission of the individual-clutch type. Many adjustments were tried, new dogs were fitted, but still no satisfactory results were obtained; the clutches would slip. On dis-assembling the transmission it was found that the cone C of each clutch, as shown in Fig. 1, was bottoming in the cup D, as shown by the recess R, which was worn into it. As the owner of the car was unwilling to await the arrival of new cups if a repair was possible, the cones were cut down as shown by the dotted lines F. The repair proved successful, and although a new set of cups and cones were soon obtained from the factory, they were not used until the car was overhauled at the end of the season.

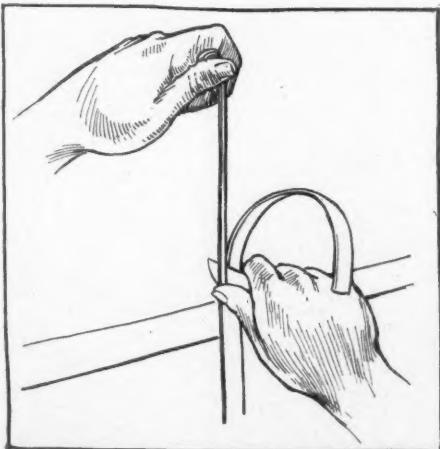


FIG. 3. CUTTING A BELT LACE

# Brief Business Announcements

Trenton, N. J.—J. B. Gundling has secured the local representation for the Lozier car.

Lansing, Mich.—The Continental Motor Mfg. Co., of Muskegon, has increased its capital stock from \$225,000 to \$500,000.

Philadelphia, Pa.—The Franklin Motor Car Co. has purchased the property at 3430 Chestnut street, and is to erect a large garage on the site.

Trenton, N. J.—In the future the Studebaker is to be handled in this city by C. P. Weeden, of the Valentine Weeden Co., of 432-438 Princeton avenue.

Guthrie, Okla.—The Southern Automobile Co., of Muskogee, has been incorporated with a capital stock of \$4,000, by S. H. Criswell, J. V. Beugler and E. E. Criswell.

Houston, Tex.—The Guillaume Auto Co., a newcomer in the local field, has been appointed distributor through south and east Texas for the Reo. Headquarters have been established at 707 Rush avenue.

Philadelphia, Pa.—Fred C. Vanderhoof, who has been connected with both the local Ford agency and the Bergdoll Motor Car Co., has been appointed representative for the Oldsmobile. He is also to handle the Oakland.

Boston, Mass.—Work is rapidly progressing on the new garage which is being built by Alvan T. Fuller, the local agent for the Packard car, and it is expected that the building will be ready for occupancy by November 10.

Battle Creek, Mich.—Don Cole has bought a half interest in the Queen City garage, of 32 West State street, and is to enter into partnership with F. W. Ellis, former proprietor of the garage. The concern is to continue to represent the Jackson.

Springfield, Mass.—The Atlas Motor Car Co., of this city, has just received an order from the Kayton Taxicab Co., of New York city, for forty of the Atlas taxis, making an aggregate of sixty-six cabs already purchased by that concern from the local company.

Detroit, Mich.—Permits have been granted to the E-M-F company for the erection of two new buildings at an aggregate cost of \$75,000. Both of these new buildings, which are practically additions to the present plant, are to be located between Clark and Scotten avenues.

Lansing, Mich.—The Gary Motor Car Co., of Muskegon, which recently filed articles of incorporation, held its first meeting of directors last week. J. J. Maloney, of Chicago, has been elected president; J. G. Ross, of Muskegon, treasurer; W. L. Simonton, of Chicago, secretary and assistant treasurer. The board

of directors is to consist of the officers and A. G. Gary, of Chicago, who owns a large percentage of the stock.

Atlanta, Ga.—E. D. Crane & Co., of this city, have been appointed agents for the Hupmobile in the northern district of this state.

New York—In the future the local branch of the Speedwell company is to be located at 1657 Broadway, having moved from 2002 Broadway.

Houston, Tex.—Lea, McCallip & Abbey have opened a new garage and salesroom at 714 Main street, and are acting as agents for the Jackson.

Elizabeth, N. J.—Newton A. Barnett is the proprietor of the new Cranford garage, which has just been opened for business, with a capacity of more than 100 cars.

Boston, Mass.—The American Simplex Co. has just secured new quarters and in the future will be located in the former home of the Goodyear Tire Co., on Dartmouth street.

Detroit, Mich.—A permit has been granted to the Packard Motor Car Co. for the erection of a four-story building, 320 by 80 feet, to be located on the south side of Palmer avenue, between Concord and Bellevue avenues. The new structure is to cost \$10,000.

East Orange, N. J.—Charles E. Riess & Son are agents for the Marion and Overland cars. The territory to be covered by the firm includes New York, Brooklyn, Long Island, Staten Island and as far north as Poughkeepsie. Mr. Riess has made arrangements for headquarters at



New York—Automobile Rim Securities Co., capital stock \$150,000. Incorporators, H. W. Goddard, R. H. Gay, of New York, and E. Week, of Jersey City.

Newark, N. J.—The Essex County Overland Co., capital stock \$100,000; to manufacture motor cars, motor cycles, etc. Incorporators, N. F. and R. D. Crocker and H. H. Poole.

New York—Hall Car Co., capital stock \$20,000; to engage in the manufacture of engines, cars, locomotives, engines and vehicles of all kinds. Incorporators T. M. May, B. H. Howell and H. P. Hall.

Rutherford, N. J.—Bergen Auto Co., capital stock \$50,000, to manufacture motors, engines, machine supplies, engineering appliances, etc. Incorporators, E. Steffins, Jr., and J. F. Steffins, both of Rutherford.

Albany, N. Y.—Trackless Trolley Co. of America, capital stock \$150,000; to manufacture motor vehicles, bicycles and other vehicles. Incorporators C. E. Barrett, A. L. Norman of 24 Fiske Place, and Sadie Wiener of 156 Vernon avenue, Brooklyn.

Plainfield, N. J.—Tygard Engine, capital stock \$250,000; to engage in the manufacture of the Tygard engine motor car, carriages, etc. Incorporators, G. M. Neagley, W. E. Buhl, F. C. Tygard of Pittsburgh, Pa., and E. Tygard and A. F. Randolph of Plainfield.

Broadway and Fifty-seventh street, New York city, formerly occupied by the Standard-Dayton.

Cleveland, O.—E. P. McGollier, of 1926 Euclid avenue, has been appointed agent for the Chase light delivery car.

Philadelphia, Pa.—The Taxi Service and Quaker City Cab Co. is preparing to erect a new garage at 1207 Vine street.

Philadelphia, Pa.—The Roman Automobile Co. has taken a lease for a term of years of the property at 238-240 North Broad street.

Indianapolis, Ind.—The Airless Tire Co., of this city, has increased its capital stock from \$10,000 to \$25,000. Charles O. Henderson is the president of the company.

Wilmington, Del.—The Pennsylvania garage, which recently started in business at Pennsylvania avenue and Clayton street, has taken the agencies for both the Oakland and Oldsmobile.

New York—John G. Dale, who for the past 10 years has been associated with the foreign car trade, has decided to devote his entire attention to the Simplex Automobile Co., of 1860-1862 Broadway. Mr. Dale has been connected with the Fiat company and has also been interested in the Rochet-Schneider.

New York—W. H. Hurlburt, who is the New York manager for the Thomas, has just gotten established in his new salesrooms at Sixty-third street and Broadway. The local branch of the Franklin Automobile Co. has just leased a new building on Eightieth street, near Broadway, which is to be used exclusively for a repair shop.

Trenton, N. J.—Articles of incorporation have been filed by the Interlaken Transit Co., of Budd Lake, with a capital stock of \$2,000, which will operate motor vehicles, etc. The Union Motor Car Co. has filed articles of incorporation with a capital stock of \$125,000. The local office is to be located at 736 Broad street, Newark.

Indianapolis, Ind.—In the future the Meridian place garage, which was recently opened at Meridian place and Twenty-second street by J. C. Lazarus, is to be under the management of A. W. Allison and A. L. Duggan, who have purchased control of the place. In the future the garage is to be known as the Twenty-second street garage.

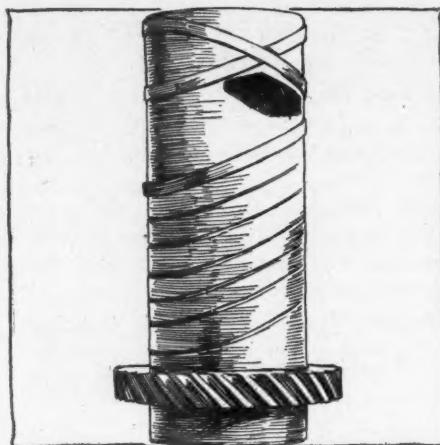
Marysville, Cal.—G. W. Harney has received a communication from one of the largest motor car plants in the east asking if it were possible to secure a suitable building site in this city. It is said the plans for the new enterprise include an investment of more than \$75,000, and that the plant will give employment to more than 100 skilled workmen.



# Development Briefs



THE introduction of the Knight engine abroad, its adoption by some of the leading motor car manufacturers of Europe, and its success in the rigorous trials and examinations to which it has been subjected by one of the most critical and impartial technical associations in the world, has stimulated foreign inventive ability to such an extent that the number of slide-valve patents recently applied for threatens to revolutionize the present valve system. The feature of the Knight engine is the slide-valve system, which consists of a pair of sleeves in each cylinder, which operate between the piston and the cylinder wall. These sleeves contain slots which, as the sleeves slide up and down, register with corresponding slots in each other and in the cylinder walls, admitting and letting out the incoming and exhaust gases. Two slide-valve motors of late invention are shown herein, as described by the Autocar. The first, the Riley, Fig. 1, does not differ materially, in operation, from the Knight. Two sleeves A and B are used, the one within the other, and ports being formed in the sides as usual. The first important feature is that between the slide valves and the piston C is arranged a stationary portion D, which may either be formed with a waterjacket or not. The outer surface against which the slide valves operate is provided with a waterjacket E, though the inventor states that this part may be air-cooled, provided the part D be waterjacketed. In this connection the inventor suggests that the parts E for a multi-cylinder engine should be cast in one and the inner parts D inserted, these parts being, of course, separate in each case. It will be noticed that the jacket D is integral with the water-cooled head F, and that where the outer



REVOLVING SLEEVE OF CLEGG MOTOR

part is provided with a jacket E the water joint occurs at G, as is the case with the Daimler engine.

Another feature of the invention lies in the operation of the valves or sleeves. Each sleeve is actuated from one side, and is formed with a groove H, with which a pin J engages. The pins J are carried by bell-crank levers operated by links. In the case of the inner pair of cylinders, the pins are attached to the rocking bar K pivoted at L, the bar being connected to a link M which carries an eccentric strap engaging an eccentric mounted on the transverse shaft N. It will be seen that as the shaft N rotates the rocker K is oscillated, drawing down one slide and raising the adjacent one. This obviates the necessity for a longitudinal shaft and a separate eccentric for each sleeve. The end pair of cylinders is provided with rockers connected by a link N actuated by another eccentric. Thus for a four-cylinder engine there are four eccentrics set in

a certain relation to one another to provide the required valve setting, so that the longitudinal camshafts are done away with.

Another engine of a somewhat different type, but probably hatched from the same idea, is one with rotating sleeve valves. In this engine, designed by W. H. Clegg, of Barnley, England, there is a single sleeve in each cylinder, which is rotated by means of worm-gearing from a side shaft that takes the place of the ordinary camshaft. This sleeve is provided with a port which, as the sleeve rotates, comes in line with the inlet and exhaust ports of the cylinder; and one of its particularly conspicuous features is the elliptical shape of the packing rings, which are in an inclined position on the sleeve. It would seem at first appearance that the cutting of the inclined rings and grooves would be extremely difficult, but by means of a simple attachment to an ordinary lathe they may be cut as easily and accurately as those of the ordinary type. The object of the inclined ring is to increase the contact surface between the ring and the cylinder wall and prevent uneven wear. It is also claimed that these rings, in conjunction with the inclined grooves in which they fit, insure perfect lubrication, although lubrication is a comparatively simple matter, as there is only one sleeve in each cylinder. As each sleeve has a rotary movement the mechanism for operating it through worm gearing is simpler than that required for producing reciprocating movement.

These are but two types of the many designs recently brought forth, and the success of the slide valve engine has stimulated rotary valve enthusiasts to bring out several successful rotary valve engines.

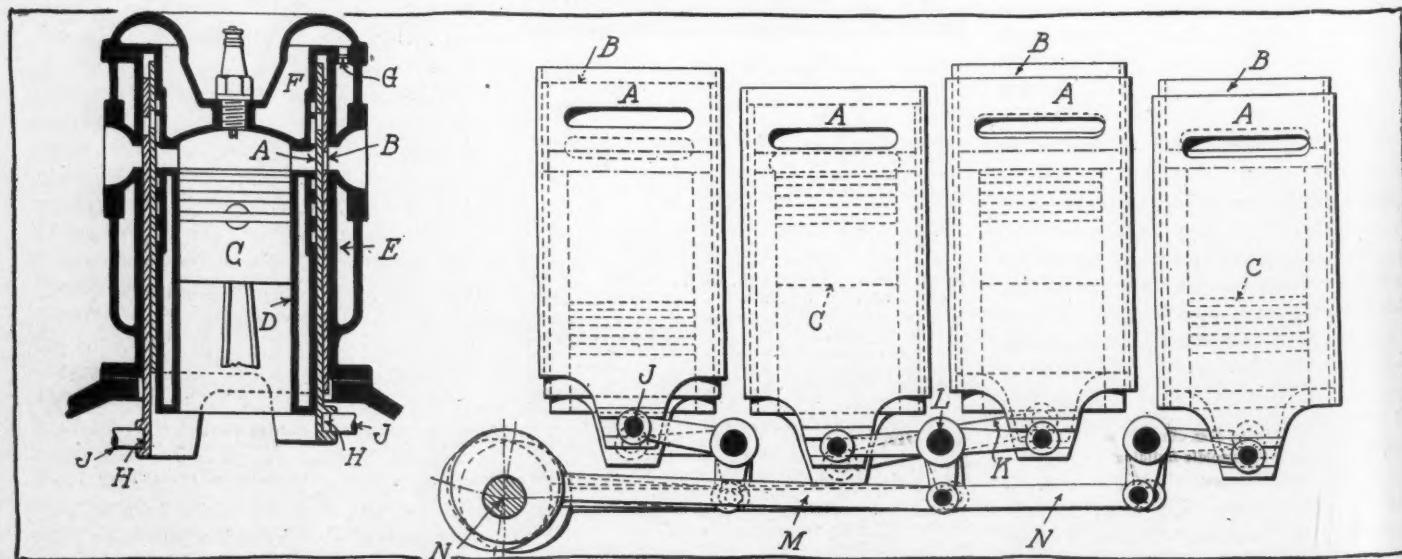


FIG. 1—SHOWING CONSTRUCTION AND OPERATION OF SLIDE VALVES IN RILEY MOTOR